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ABSTRACT

The National Center for Education Statistics conducted a comprehensive analysis of the current context of vocational education (VE), employer perspectives on VE, trends in secondary and postsecondary VE, the academic preparation of students participating in VE, relevant school reform efforts, and VE students' transitions after high school. Among the main findings of the analysis were: (1) most employers of employees who had participated in work-based learning reported that those employees were superior to comparable new employees in terms of productivity and attitude; (2) high school students' participation in VE generally declined between 1982-1994; (3) the academic preparation of high school students participating in VE increased in 1982-1994; (4) vocational concentrators had lower overall rates of postsecondary completion than their peers; (5) vocational concentrators were more likely to be in the labor force 2 years after graduation than their college preparatory peers were; and (6) vocational concentrators and students completing general coursework in high school had similar labor market outcomes 10 years after graduation from high school. (Appendixes constituting approximately 50% of this report contain the following: 116 standard error tables; data sources and technical notes; and glossary. (Contains 37 references and 161 tables/figures.) (MN)

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VOCATIONAL EDUCATION IN THE UNITED STATES: TOWARD THE YEAR 2000

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ERRATA

Vocational Education in the United States: Toward the Year 2000

1. p. vi. The first sentence should read, "In addition, the majority of employers with **new** production employees who participated in work-based learning reported that these employees were superior to comparable new hires in terms of productivity and attitude."

2. p. x. Figure C. The percentages for 1992 graduates should be **55** percent for vocational concentrators total, **69** percent for other/general, and **93** percent for college preparatory only.

3. p. xi. The last sentence should read, "Both those who held a postsecondary certificate and **those who held a** high school diploma earned less and were more likely to be unemployed in 1991 than graduates who held an associate's degree or higher."

May 1, 2000

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Statistical Analysis Report February 2000

VOCATIONAL EDUCATION IN THE UNITED STATES: TOWARD THE YEAR 2000

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Executive Summary

I. INTRODUCTION

With the advent of the 21st century, vocational education in the United States is in transition. Historically, the purpose of vocational education has been to prepare students for entry-level jobs in occupations requiring less than a baccalaureate degree. Over the last 15 years, however, this purpose has shifted toward broader preparation that develops the academic, vocational, and technical skills of students in vocational education programs. This preparation involves integrating academic and vocational education, emphasizing all aspects of an industry, and implementing academic performance measures, among other reform efforts. Vocational education policy now also encourages high school students to continue their studies at the postsecondary level, and 2-year postsecondary students to pursue 4-year credentials through various articulation or "tech-prep" arrangements. The traditional focus of vocational education is giving way to a broader purpose—one that includes greater emphasis on academic preparation and provides a wider range of career choices.

Vocational Education in the United States: Toward the Year 2000 attempts to capture this evolving enterprise. In addition to describing trends in participation in secondary and postsecondary vocational education, the report also presents findings about the academic preparation of high school students who participate in vocational education, relevant school reform efforts, and transitions after high school. However, the surveys available for assessing the status of vocational education were generally designed to capture more traditional conceptions of the enterprise and often do not provide information on the most current reform efforts. Nevertheless, the available data do signal that change is occurring in the directions advocated by reform efforts, although such change is often small and preliminary. The report also describes economic and labor market trends and their implications for vocational programs, as well as changing workplace practices and employer perspectives on worker skills and proficiency. The most important findings presented in the report are highlighted below.

II. THE CONTEXT

Economic Trends (page 15)

The United States is shifting from a manufacturing-based economy to one that overwhelmingly provides services and information. These trends have two important implications for vocational education programs. They signal an ongoing shift in the education and training fields that are required of the U.S. work force as well as shifts in the levels of that education and training. Vocational programs that prepare students for manufacturing jobs include trade and industry programs, such as construction, mechanics and repair, precision production, and transportation and material moving. Vocational programs that prepare students for jobs in the services and information industries include health care and technology and communications, among others.

Changing Education and Skill Requirements (page 24)

Generally, the research literature describes a trend toward greater education and training requirements and a greater need for critical thinking, personal responsibility, and social skills among work force participants. For example, recent projections anticipate that average growth will be greater for occupations requiring at least an associate's degree than for occupations requiring less education. However, these trends are not uniform across industries and occupations, and some disagree about their magnitude. Some emerging occupations require high education and training requirements (such as a bachelor's degree or moderate- to long-term on-the-job training), while many jobs still demand relatively low education and training levels. In 1996, 39 percent of all jobs required no more than short-term on-the-job training.

Understanding these economic and labor market trends provides a context for analyzing trends in vocational education. For example, if participation in vocational programs parallels changes in the economy, one would expect to see a decline in enrollments in trade and industry programs in recent years and an increase in enrollments in service- and information-related programs. Similarly, if vocational education reflects the labor market trend toward greater education and training requirements, one would expect to find that the academic preparation of students participating in vocational education has increased in recent years and that more of these participants are seeking and obtaining higher education and training credentials. These issues are addressed in sections IV–VI below.

III. EMPLOYER PERSPECTIVES[1]

Workplace Practices (page 34)

Changes in the economy and in education are altering workplace practices, which have implications for the skills required of employees. Increased global competition has spurred some U.S. businesses to create "high-performance workplaces," relying on flexible and decentralized work practices and multi-skilled workers. These firms, however, are still in the minority. For example, 20 percent of surveyed employers reported engaging in performance benchmarking in 1997, and 25 percent had undergone reengineering. Larger firms were more likely than smaller firms to report these practices, indicating that the percentage of employees affected by these practices may be greater than the percentage of employers reporting them.

Also, the 1994 School-to-Work Opportunities Act advocated employer involvement in school-to-work partnerships and wider implementation of work-based learning, including job shadowing, mentoring, internships, and apprenticeships. Once again, however, a minority of firms reported participating in these activities. One-quarter of surveyed employers reported participating in a school-to-work partnership, and 42 percent reported providing at least one formal work-based learning activity. As above, larger firms were more likely than smaller firms to report these different practices.

Perspectives on Employees (page 38)

While the general labor market trend may be toward higher education and training requirements, employers have a unique perspective, which is particularly important in the short term. When hiring front-line workers from an established applicant pool, surveyed employers did not rate years of completed schooling or academic performance as highly as attitude and communication skills. However, it may be that years of completed schooling and academic performance are more important during initial applicant screening. It may also be that employers have historically found that schooling measures are not reliable indicators of what students know and can do.

With the evolving economy and changes in education and skill requirements, attention over the last two decades has focused on whether employees are adequately prepared for the demands of the workplace. According to most surveyed employers, the proficiency of their production workers either stayed the same or increased in recent years.[2] In addition, the majority of employers with production employees who participated in work-based learning reported that these employees were superior to comparable new hires in terms of productivity and attitude. Virtually no employers reported that employees with work-based learning experience were inferior in these two respects to comparable new hires.[3]

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[1] The findings in this section come from the 1994 and 1997 National Employer Surveys, which gathered data from a random sample of private firms with 20 or more employees.

IV. TRENDS IN SECONDARY VOCATIONAL EDUCATION[4]

Participation in High School Vocational Education (page 49)

From 1982 to 1994, there was a general decline in the participation of high school students in vocational education (figure A). The average number of vocational credits public high school graduates earned decreased over the period studied, as did the percentage of graduates completing a sequence of related occupational courses.[5]

Trade and industry and business were the most popular occupational programs in 1994—about 8 percent of public high school graduates concentrated in each of these areas. These were also the most popular programs in earlier years. However, consistent with reported economic trends, the percentage of graduates concentrating in trade and industry declined over the period studied, as did the percentage of graduates concentrating in business. (In 1982, about 15 percent of graduates had concentrated in trade and industry, and 12 percent in business.) Exhibiting an opposite trend, the proportions of students concentrating in health care and in technology and communications almost doubled between 1982 to 1994. Nevertheless, the percentages of high school graduates concentrating in these program areas in 1994 were still quite small (about 1 percent each).

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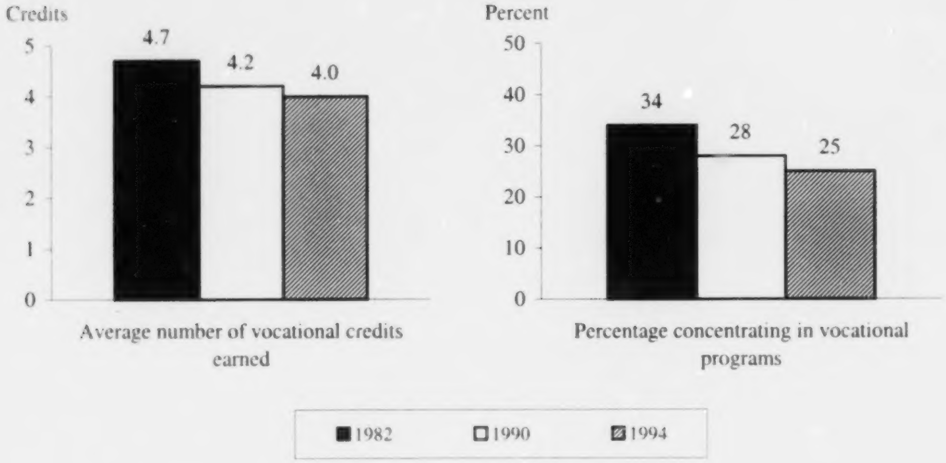
[2] Employer-provided training, which also increased over this time period, may have contributed to proficiency gains. Alternatively, education reform efforts over the last decade may have contributed to the improvement in worker proficiency. In either case, it is impossible to establish a causal link from the available data.

[3] However, in a rigorous evaluation of the benefits of work-based learning, it would be necessary to compare all work-based learning participants, not just those who were hired, with other comparable workers. It may be, for example, that those work-based learning participants who were hired had better recommendations or references than those who were not.

[4] Unless otherwise noted, trends in this section come from an analysis of transcripts for public high school graduates in 1982, 1990, and 1994. In addition to the topics described in this section, Chapter IV of the report also presents findings on academic achievement gains (page 62), work experience and work-based learning (page 87), technology literacy (page 90), and teacher professional development activities (page 101).

[5] These decreases may be partly due to increases in high school graduation requirements implemented by many states after the publication of *A Nation at Risk* in 1983. Because students have been required to take more academic coursework, they may have elected to take fewer vocational courses. Alternatively, because of fiscal or economic pressures, or both, schools may have reduced their vocational offerings in recent years.

Figure A—Average number of vocational credits earned by public high school graduates and percentage of public high school graduates concentrating (accumulating 3 or more credits) in vocational programs: 1982, 1990, 1994



SOURCE: U.S. Department of Education, National Center for Education Statistics, High School and Beyond Sophomore Cohort 1982 High School Transcript Study and 1990 and 1994 National Assessment of Educational Progress High School Transcript Studies.

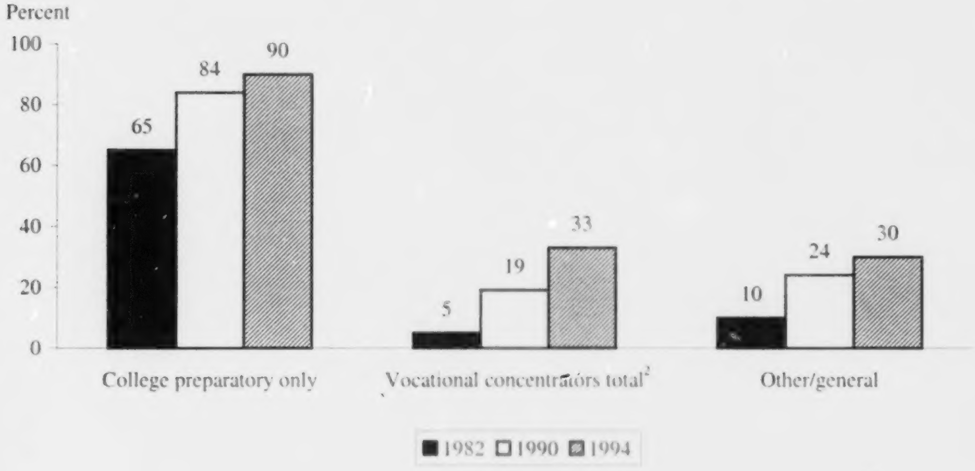
Characteristics of High School Students Participating in Vocational Education (page 52)

Although participation in vocational education declined for most groups of public high school students between 1982 and 1994, there were a few exceptions to this trend. The percentages of black, non-Hispanic students and Asian/Pacific Islander students concentrating in vocational education stayed about the same over this period, and the concentration rate of students with disabilities increased. The increase in participation of students with disabilities is consistent with the emphasis of the 1990 Perkins Act on serving students with special needs.

Academic Course-Taking Trends (page 62)

The academic preparation of high school students participating in vocational education increased between 1982 and 1994, in both absolute and relative terms (figure B). While public high school graduates generally increased their coursetaking in the core academic subjects (English, mathematics, science, and social studies), the rate of increase was greater for vocational concentrators than for either college preparatory students or those completing general coursework in high school. Vocational concentrators also generally increased the rigor of their academic coursework, particularly in mathematics, science, and social studies. However, in 1994, vocational concentrators still completed fewer total credits in each of the core academic subjects than did either college preparatory students or those completing general coursework in high school.

Figure B—Percentage of public high school graduates meeting the New Basics core academic standards,[1] by curriculum specialization in high school: 1982, 1990, and 1994



[1]The New Basics core academic standards include 4 years of English and 3 years each of mathematics, science, and social studies.

[2]Includes students who completed both a vocational concentration and a college preparatory curriculum.

SOURCE: U.S. Department of Education, National Center for Education Statistics, High School and Beyond Sophomore Cohort 1982 High School Transcript Study and 1990 and 1994 National Assessment of Educational Progress High School Transcript Studies.

School Reform Efforts[6] (page 81)

By 1997, some public comprehensive high schools had implemented vocational education-related reforms, although the quality and specific forms of these efforts were not discernible from the available survey data. About half of these schools reported integrating academic and vocational education, and a similar proportion reported offering tech prep. Fewer schools reported having block scheduling, career majors, school-based enterprises, skill standards, or skill or occupational certificates. Generally, schools with career academies and larger schools were more likely to report these reforms, while rural schools were less likely to do so.

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[6] The findings in this section come from the National Longitudinal Study of Youth of 1997, which provides information on public schools with a 12th grade. Unfortunately, schools classified by their districts as primarily "vocational" were excluded from the sample. Consequently, the survey generally describes public comprehensive high schools and, therefore, may provide a conservative estimate of local reform efforts.

Vocational Teacher Qualifications and Experience[7] (page 93)

Vocational and academic high school teachers were similar in a number of ways: about the same proportions held bachelor's degrees, and similar percentages held either standard or advanced certification. However, about 8 percent of vocational teachers had less than a bachelor's degree, in comparison with less than 1 percent of academic teachers.[8] Also, vocational teachers were generally older than academic teachers, which may be due to the fact that vocational teachers entered the teaching profession at an older age, possibly after obtaining industry experience. There were some variations among vocational teachers who taught in different program areas and school settings. For example, trade and industry and technical teachers and those teaching in more than one vocational field were generally less likely than other vocational teachers to have a bachelor's or advanced degree.

V. TRANSITIONS AFTER HIGH SCHOOL[9]

The Transition to Postsecondary Education: 2 Years After High School (page 109)

The postsecondary enrollment rates of public high school graduates showed a marked increase between 1982 and 1992. About half of those students graduating in 1982 enrolled in a postsecondary institution within 2 years, while about three-fourths of the more recent graduating class enrolled within 2 years. Between 1982 and 1992, postsecondary enrollment rates increased for vocational concentrators and students completing general coursework in high school, but not for college preparatory graduates (figure C). While the gap in enrollment rates among the three groups of students appeared to be narrowing, 1992 vocational concentrators were still less likely than their college preparatory peers and those completing general coursework in high school to enroll in a postsecondary institution within 2 years. However, vocational concentrators who also completed a college preparatory curriculum had enrollment outcomes that were more like those of their college preparatory peers than did strictly vocational concentrators.

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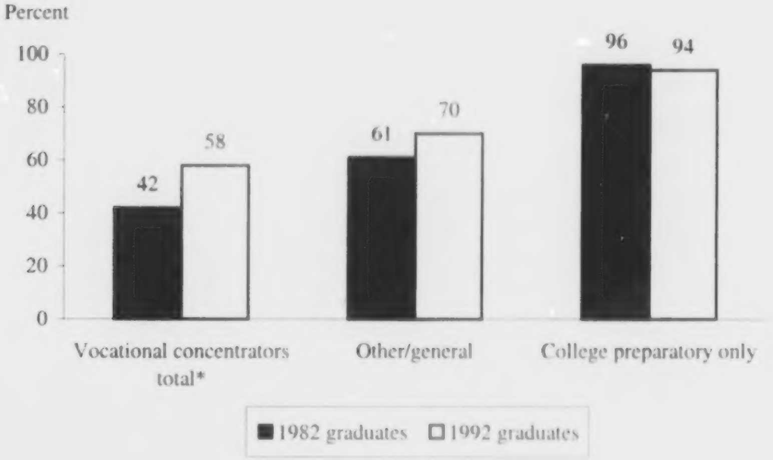
[7] The findings in this section come from the Schools and Staffing Surveys of 1991 and 1994.

[8] Academic teachers were more likely than vocational teachers to have a master's or doctorate/first-professional degree.

[9] Two data sets were used for the analysis in this section: High School and Beyond, for 1982 public high school graduates, and the National Education Longitudinal Study of 1988, for 1992 public high school graduates. In addition to the topics described in this section, Chapter V of the report also presents findings on postsecondary remedial coursework (page 125).

Figure C—Percentage of 1982 and 1992 public high school graduates enrolling in postsecondary institutions by 1984 and 1994, respectively, by curriculum specialization in high school



*Includes students who completed both a vocational concentration and a college preparatory curriculum.

SOURCE: U.S. Department of Education, National Center for Education Statistics, High School and Beyond Sophomore Cohort 1982 High School Transcript Study and Second Follow-up Survey, and National Education Longitudinal Study of 1988, Third Follow-up and High School Transcript Study.

Vocational concentrators were more likely than students completing general coursework in high school to obtain a degree or certificate within 2 years, despite the fact that the two groups enrolled at similar rates in community colleges and that vocational concentrators were more likely to be employed while in school.

The Transition to Postsecondary Education: 10 Years After High School (page 118)

Among 1982 graduates, vocational concentrators were less likely than either their college preparatory peers or students completing general coursework in high school to enroll in postsecondary education by 1992. However, vocational concentrators who also completed a college preparatory curriculum were about as likely as college preparatory graduates to enroll during this 10-year period.

Postsecondary Completion 10 Years After High School (page 129)

More than half of 1982 public high school graduates who enrolled in postsecondary education completed a degree or certificate by 1992. Vocational concentrators had lower overall rates of postsecondary completion than their peers. However, vocational concentrators who also completed a college preparatory curriculum were as likely as college preparatory graduates to earn a postsecondary degree or certificate during this period. Among graduates who enrolled in postsecondary education by 1992, vocational concentrators were less likely than their peers to earn a bachelor's degree, but more likely to obtain a certificate or an associate's degree.

Labor Market Outcomes 2 Years After High School (page 132)

Labor market outcomes 2 years after leaving high school were similar for the graduating classes of 1982 and 1992. In both cases, about three out of four public high school graduates were in the labor force. Vocational concentrators in both graduating classes were more likely than their college preparatory peers to be in the labor force 2 years after graduation. While 1992 public high school graduates had similar labor market experiences regardless of their course of study in high school, 1982 college preparatory graduates tended to have lower unemployment rates than vocational concentrators and those completing general coursework in high school. This difference between the two graduating classes may be due to shifts over the decade in economic conditions, changes in the academic preparation of high school graduates, or other factors.

Labor Market Outcomes 10 Years After High School (page 135)

Vocational concentrators and students completing general coursework in high school had similar labor market outcomes 10 years after graduation from high school. While the number of months employed and unemployed was similar regardless of students' course of study in high school, college preparatory graduates tended to enjoy higher earnings in 1991 than their peers, possibly because of their greater postsecondary attainment. Obtaining a bachelor's degree was generally associated with increased earnings and lower unemployment rates. At the other end of the educational spectrum, students who earned a postsecondary certificate had similar annual earnings and unemployment rates as their peers who did not complete a postsecondary degree or certificate. Both those who held a postsecondary certificate and high school diploma earned less and were more likely to be unemployed in 1991 than graduates who held an associate's degree or higher.

VI. TRENDS IN POSTSECONDARY VOCATIONAL EDUCATION[10]

Trends in Educational Attainment (page 149)

The United States has experienced both greater educational participation and higher attainment in recent years, continuing long-standing patterns. More people are attending postsecondary institutions than ever before, and the average educational attainment of the adult population has been steadily rising. While the total number of adults who earned vocational associate's degrees appeared to increase slightly between 1992 and 1996, this difference was not statistically significant. However, the total number of adults who held academic associate's degrees increased over the 4 years by approximately an additional 1 million people.[11]

Although postsecondary enrollments overall have shown recent increases, there is no evidence that bachelor's degree holders are returning in large numbers for additional undergraduate schooling, as some have speculated. In particular, small proportions of students who were pursuing associate's degrees or certificates had already earned a bachelor's or advanced degree. The vast majority of students who enroll in postsecondary education are pursuing a higher level credential than the one they currently possess. However, this report focused on students who participate in for-credit postsecondary programs. It may be that a significant number of bachelor's degree holders are taking noncredit, adult, or continuing education courses.

Participation in Postsecondary Vocational Education (page 152)

Vocational coursework represents a substantial component of subbaccalaureate students' education. Among all subbaccalaureate students, about one-half majored in a vocational program area in 1996; the proportion decreased from 54 to 49 percent over the 6 years from 1990 to 1996.[12] There was an increase between 1990 and 1996 in the proportion of postsecondary vocational students being served by community colleges, with a corresponding decrease at private proprietary institutions (figure D).

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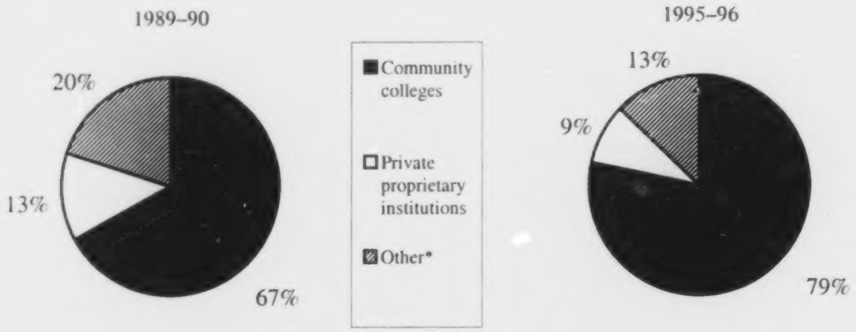
[10] Unless otherwise noted, the findings in this section come from the 1989–90 and 1995–96 National Postsecondary Student Aid Study (NPSAS). Because recent postsecondary transcript data were not available, the information on trends at the postsecondary level is generally less detailed than that at the secondary level. Specifically, it was not possible to examine actual course-taking patterns in this section. Instead, the analysis relied primarily on self-reported degrees and majors. In addition to the topics described in this section, Chapter VI of the report also presents findings on work experience while enrolled (page 168), licensure (page 178), and labor market participation (page 179).

[11] The findings presented in this paragraph come from the U.S. Census Bureau's Current Population Surveys.

[12] There were substantial amounts of missing data on student's major field in both NPSAS surveys. About 24 percent of subbaccalaureate students in 1990 and 28 percent in 1996 did not report their major field.

Figure D—Percentage distribution of subbaccalaureate students reporting a vocational major according to type of postsecondary institution: 1989–90 and 1995–96



*Other institution types include public 4-year; private, not-for-profit 4-year; private, not-for-profit less-than-4-year; and public vocational-technical institutions.

NOTE: Percentages may not add to 100 due to rounding.

SOURCE: U.S. Department of Education, National Center for Education Statistics, 1989–90 and 1995–96 National Postsecondary Student Aid Study.

Subbaccalaureate Student Characteristics (page 157)

Subbaccalaureate students with vocational majors were more likely to be older, to have family responsibilities, to receive financial aid, to have a previous postsecondary degree or certificate, and to report higher postsecondary grade-point averages (GPAs) than their academic counterparts. These students with vocational majors also tended to have parents with lower educational attainment: as the education level of their parents increased, students' likelihood of reporting a vocational major generally decreased. Differences by race–ethnicity among subbaccalaureate students in their probability of having a vocational major were either minimal or not statistically significant. Also, among subbaccalaureate students, there was no clear association between majoring in a vocational field and disability status.

Specific Occupational Preparation (page 164)

Business, health, and technical fields (the latter including engineering/science technologies, computers/data processing, and protective services) accounted for large numbers of vocational students' majors. However, between 1990 and 1996, there were small decreases in the proportions of subbaccalaureate students reporting majors in business, marketing, computers/data processing, and engineering/science technologies. Thus, the absolute level of participation in service-

and information-related programs was relatively high in 1996, while the trend in these areas was generally downward over the 6-year period.

Among subbaccalaureate students, gender gaps persisted in the fields of business, health, and "other vocational" fields (where women predominated), as well as in trade and industry, protective services, computers/data processing, and engineering/science technologies (where men predominated). A particularly large gap between the participation of men and women occurred in 1996 in engineering/science technologies, a field in which 12 percent of male students and only 2 percent of female students declared a major.

Postsecondary Completion (page 172)

Among the group of students who first began their postsecondary studies in 1989–90, those with academic majors were more likely than those with vocational majors to have completed at least one postsecondary credential 4 years later. However, a majority of both academic and vocational majors completed some type of degree or certificate within 4 years.

VII. CONCLUSION

This publication describes vocational education at the turn of the century as an enterprise in transition. The available data signal that change is occurring in the directions advocated by recent reform efforts, in particular, improved academic preparation and greater postsecondary participation. Evidence of change includes findings that the academic preparation of public high school students participating in vocational education increased between 1982 and 1994; about half of public comprehensive high schools reported integrating academic and vocational education in 1997, and a similar proportion reported offering tech prep; and from 1982 to 1992, postsecondary enrollment rates within 2 years of public high school graduation increased significantly for vocational concentrators.

There is mixed evidence that trends in participation in vocational programs reflect economic shifts away from manufacturing toward services and information industries. For example, at the high school level, the percentage of graduates who concentrated in trade and industry declined between 1982 and 1994, and the proportions of students who concentrated in health care and in technology and communications increased over the period. However, the percentages of high school graduates who concentrated in health care and in technology and communications were still quite small in 1994 (about 1 percent each). At the postsecondary level, for example, health and engineering/science technologies were popular vocational majors in 1996. However, there were small decreases between 1990 and 1996 in the proportions of subbaccalaureate students reporting majors in computers/data processing and in engineering/science technologies. Thus, data on trends in and levels of participation in health and technology programs provided conflicting information about whether vocational program participation is paralleling the economic shift toward services and information industries.

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Foreword

In 1987, the National Center for Education Statistics (NCES) instituted a new approach to collecting and reporting data on vocational education. Under the new approach, vocational education data are collected primarily through general purpose surveys rather than separate vocational education questionnaires. This arrangement allows NCES to situate vocational education activities within the broader education context. In 1998, a Technical Review Panel was formed to provide NCES with regular input on its Data on Vocational Education (DOVE) program.

This report is the third in a series published by NCES. The first two reports, *Vocational Education in the United States: 1969–1990* and *Vocational Education in the United States: The Early 1990s*, were published in 1992 and 1995, respectively. Each describes vocational education in America, updating key trends based on available data and focusing on selected issues relevant to current policy discussions. The first publication had about one page of text dedicated separately to each of 60 tables. The second provided a 25-page synthesis of data from over 100 tables published as an appendix to the report. This third publication incorporates relevant tables and figures into a more detailed analysis of vocational education trends toward the year 2000.

NCES intends to continue producing a report on the status of vocational education about every 3 years. In the future, different analytic approaches may be tried and various related products produced. Your comments about the NCES vocational education publication series are welcome and may be sent to Lisa Hudson, NCES, 555 New Jersey Avenue, NW, Room 3106, Washington, DC 20208.

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I. Introduction

VOCATIONAL EDUCATION TOWARD THE YEAR 2000

With the advent of the 21st century, vocational education in the United States is in transition. The traditional focus on preparing students for entry-level jobs after high school or 1 or 2 years of postsecondary training is giving way to a broader purpose—one that includes greater emphasis on academic preparation and provides a wider range of career choices. *Vocational Education in the United States: Toward the Year 2000* attempts to capture this evolving enterprise. However, the surveys available for assessing the status of vocational education were generally designed to capture more traditional conceptions of the enterprise and often do not provide information on the most current reform efforts. Nevertheless, the available data do signal that change is occurring in the directions advocated by reform efforts, although such change is often small and preliminary. Because the Carl D. Perkins Vocational and Applied Technology Education Act of 1998 (1998 Perkins Act) generally continues the reforms mandated by its 1990 predecessor rather than changing the course of reform, future data collection may detect greater shifts in the structure, content, and impact of vocational education.

This report is the third in a series published by the National Center for Education Statistics (NCES). The first two reports, *Vocational Education in the United States: 1969–1990* and *Vocational Education in the United States: The Early 1990s,* were published in 1992 and 1995, respectively. Each describes vocational education in America, updating key trends based on available data and focusing on selected issues relevant to current policy discussions. This introduction describes the direction reform has taken in recent years, as well as the current structure of vocational education at both the high school and postsecondary levels.

The Direction of Reform

Historically, the purpose of vocational education has been to prepare students for entry-level jobs in occupations requiring less than a baccalaureate degree. Over the last 15 years, however, this purpose has shifted toward broader preparation that develops the academic, vocational, and technical skills of students in vocational education programs. This preparation involves the integration of academic and vocational education, emphasis on all aspects of an industry, and implementation of academic performance measures, among other reform efforts. Vocational education legislation and policy now also encourage high school students to continue their studies at the postsecondary level, and 2-year postsecondary students to pursue 4-year credentials through various articulation or "tech-prep" arrangements. This shift in purpose began in the mid-1980s, was first passed into law at the federal level in the 1990 Perkins Act, and was confirmed by the recently passed 1998 Perkins Act.

In the mid-1980s, after publication of *A Nation at Risk*,[1] some educators and school reformers began advocating for strengthening academic learning and better preparing students for the world of work. They believed this could be accomplished by integrating academic and vocational education and developing tech-prep programs.[2] Integration was seen as a means to make academic learning more meaningful for all students, to prepare all students more broadly for employment, to improve student engagement and learning, and to improve the academic content of vocational courses, among other objectives. Tech-prep programs that articulate the last 2 years of high school and the first 2 years of postsecondary vocational education programs were designed to help students develop both strong academic and occupational skills and were seen as a way to prepare them for a growing number of technical jobs and for greater flexibility and adaptability in the workplace.

At the federal level, these reforms were first enacted in the 1990 Perkins Act, along with a new requirement for states to develop performance measures and standards—including a measure of academic gains—for assessing local vocational programs. The 1994 School-to-Work Opportunities Act (the STWO Act) later reinforced the call for integration of academic and vocational education and articulation of secondary and postsecondary education; however, the STWO Act advocated these reforms for *all* students, not just those in vocational education programs. The STWO Act also advocated wider implementation of work-based learning—a common component of traditional vocational education programs—and called for multiple forms of it, including job shadowing, mentoring, internships, and apprenticeships.

The 1998 Perkins Act, which will accompany vocational education into the 21st century, continues the emphasis on integration, secondary–postsecondary articulation, and "all aspects of the industry," and once again requires a measure of academic performance. Furthermore, the new Act strengthens the accountability mechanism of performance measures by linking monetary disincentives to poor performance on them.

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[1] National Commission on Excellence in Education, *A Nation at Risk: The Imperative for Educational Reform* (Washington, D.C.: 1983).

[2] See C. Stasz, T. Kaganoff, and R.A. Eden, *Integrating Academic and Vocational Education: A Review of the Literature, 1987–1992* (MDS–1034) (Berkeley: National Center for Research in Vocational Education, March 1995); and C. Dornsife, *Beyond Articulation: The Development of Tech Prep Programs* (MDS–311) (Berkeley: National Center for Research in Vocational Education, February 1992).

Vocational education is evolving into a multipurpose enterprise that seeks to impart not only occupational skills to students wishing to enter employment directly, but also academic skills deemed to provide students with better preparation for both the world of work and postsecondary education. Consequently, more students will likely have a greater set of options available to them as they choose and invent their careers. Where this evolution will eventually lead is uncertain. That it is evolving is clear.

Vocational Education at the High School Level

When investigating trends in vocational education at the high school level, two questions should be addressed: How has vocational education traditionally been organized and delivered? and How does one measure participation in vocational education?

The Organization and Delivery of Vocational Education

Vocational education at the high school level has traditionally consisted of courses in specific labor market preparation (SLMP) (such as agriculture and renewable resources, business, health care, and trade and industry); family and consumer sciences education (FCSE) (formerly called "consumer and homemaking education"); and general labor market preparation (GLMP) (a loose collection of general preparation coursework, including basic keyboarding and typewriting, industrial arts and the newer technology education, and career preparation and general work experience). Figure 1 classifies high school courses according to the taxonomy used for this report, including academic, vocational, enrichment/other, and special education courses. This taxonomy was recently revised by NCES, and changes in the SLMP categories are noted for anyone comparing this report with the previous two *Vocational Education in the United States* publications. Generally, only minor revisions in course classifications were made, although a few were notable.[3] For example, the revised taxonomy now includes English as a Second Language courses under English rather than under Non-English (previously Foreign) Languages. Additionally, all computer-related courses are now included under the Vocational curriculum, whereas some were previously included under Mathematics. Because of these and other shifts in the placement of specific courses, there may be small differences between the percentages and average credits published in this report and those published in previous *Vocational Education in the United*

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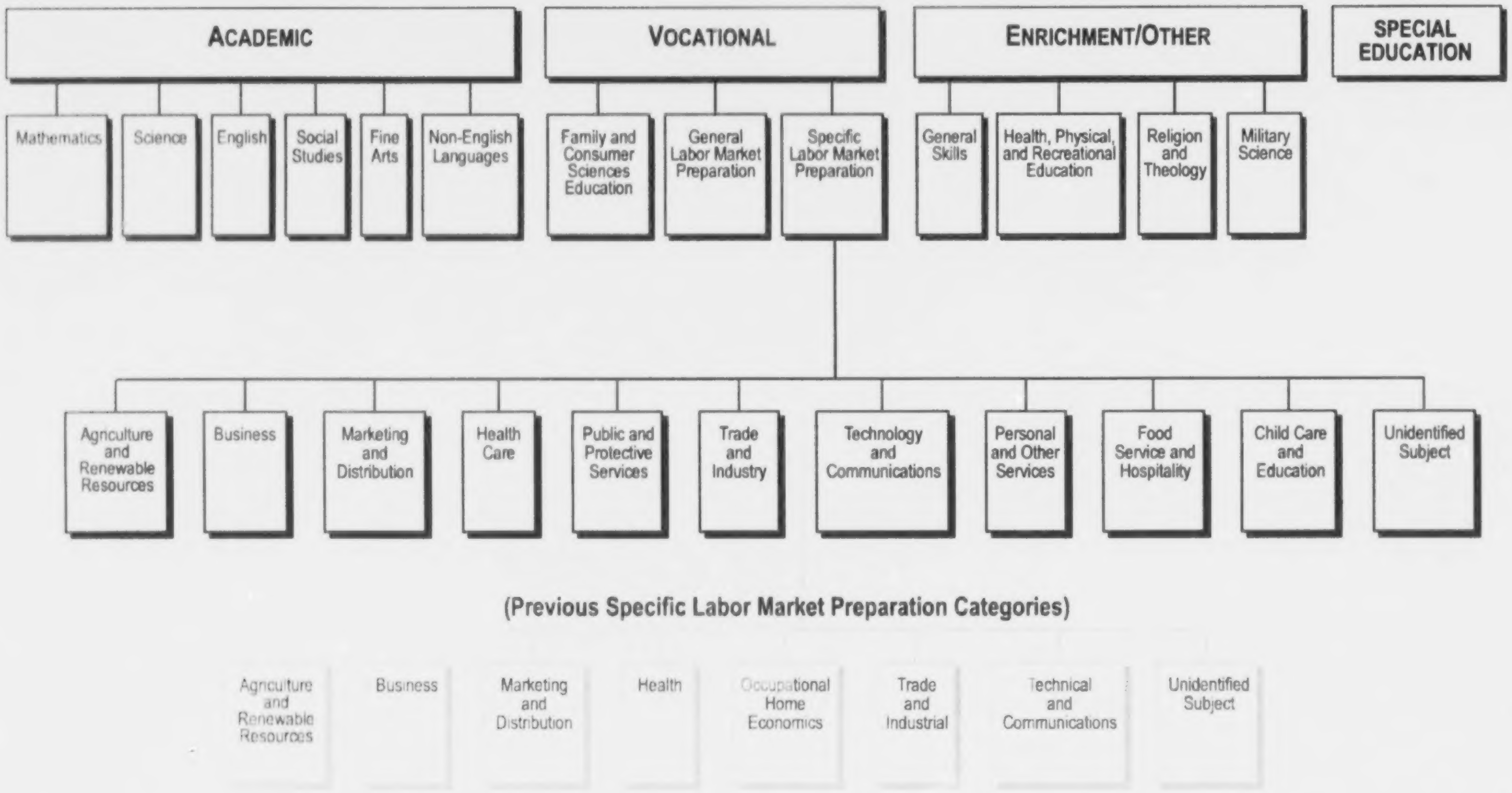
[3] See D. Bradby and E.G. Hoachlander, *1998 Revision of the Secondary School Taxonomy* (Working Paper No. 1999–06) (Washington, D.C.: U.S. Department of Education, National Center for Education Statistics, March 1999).

FIGURE 1—SECONDARY SCHOOL TAXONOMY


ACADEMIC
VOCATIONAL
ENRICHMENT/OTHER
SPECIAL EDUCATION
Mathematics
Science
English
Social Studies
Fine Arts
Non-English Languages
Family and Consumer Sciences Education
General Labor Market Preparation
Specific Labor Market Preparation
General Skills
Health, Physical, and Recreational Education
Religion and Theology
Military Science
Agriculture and Renewable Resources
Business
Marketing and Distribution
Health Care
Public and Protective Services
Trade and Industry
Technology and Communications
Personal and Other Services
Food Service and Hospitality
Child Care and Education
Unidentified Subject
(Previous Specific Labor Market Preparation Categories)
Agriculture and Renewable Resources
Business
Marketing and Distribution
Health
Occupational Home Economics
Trade and Industrial
Technical and Communications
Unidentified Subject

SOURCE: Adapted from Denise Bradby and E.G. Hoachlander, *1998 Revision of the Secondary School Taxonomy* (Washington, D.C.: U.S. Department of Education, National Center for Education Statistics, Working Paper No. 1999-06, March 1999).

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States publications or other NCES publications, such as the *Digest of Education Statistics*. However, differences should generally be small.[4]

The program areas listed under the "specific labor market preparation" heading represent broad groupings of related occupational programs.[5] For example, "agriculture and renewable resources" encompasses programs in agricultural technology and horticulture, among others. The "trade and industry" classification consists of the construction trades, mechanics and repair, precision production, and transportation and material moving; these groupings encompass even narrower programs. Construction trades, for instance, includes specific programs in electricity, carpentry, and plumbing, among others. The categories in figure 1 were constructed for a couple of reasons. First, while some schools offer a sequence of courses in a single narrow occupational area (such as Electricity 1 and Electricity 2), many programs of study involve taking coursework in related occupational areas. For example, both electricity and carpentry programs may recommend that their students take electrical fundamentals, blueprint reading, and customer relations courses in addition to their core technical coursework. Although these courses may be associated with a particular occupational program, they may be available to and form part of the program of study for students in several different occupational programs. Moreover, individual schools may attach specific courses to program areas in varying ways. For example, one school may consider blueprint reading to be part of the electricity program, while another may offer it through its carpentry program. Grouping related courses and programs together avoids misclassifying some courses. The second reason for establishing these broad groupings is that the number of students included in a national educational survey who take courses in any one narrow occupational area is often too small to be reported reliably.

Recent research suggests that schools are beginning to organize occupational education around broader occupational clusters or specific industries. These new initiatives represent attempts to provide students with broader academic and occupational preparation so they have a greater choice of careers and postsecondary paths and can bring a wider array of skills into the work world. Some practices include organizing entire schools around a broad occupational or industry theme (such as aviation, fashion, or finance); these schools are sometimes called "magnet" or "theme schools." Other practices include creating one or more schools-within-a-school that have occupational or career-related themes (such as health science, business and finance, natural resources, graphic arts, communications, or technology). These career academies or "houses" may be designed for either at-risk or academically talented students, or for a heterogeneous mix of students. Still other practices involve grouping occupational programs into clusters, majors, or pathways. The current taxonomy of high school courses and the reliance of NCES on transcript data for obtaining reliable information on students' course-taking patterns are generally not able to capture these school-level phenomena. Instead, a survey of school administrators included in this report provides some information on the prevalence of these activities.[6]

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[4] Differences among published data may also be due to the application of different rules for determining which students should be included in an analysis. This report bases its analysis of high school coursetaking on the sample of public high school graduates who earned 16 or more Carnegie units in high school and a positive number of Carnegie units in English.

[5] For simplicity's sake, the "specific labor market preparation" categories in figure 1 are often referred to in this report as "occupational program areas."

These reforms aside, vocational education has usually been offered in three main public high school settings.[7] Comprehensive high schools—the traditional American high school—typically offer the full range of academic and vocational education, including FCSE, GLMP, and SLMP coursework, although the latter offerings may be limited depending on the school. In addition to comprehensive high schools, some states have area vocational schools, usually offering a wide range of occupational programs, that students attend for part of the day to take their occupational coursework. Where area vocational schools exist, the comprehensive "sending" high school may restrict its vocational offerings to FCSE and GLMP courses. Finally, a few states have full-time vocational high schools that provide students with all of their academic preparation, as well as offer a variety of occupational programs. Such high schools may or may not be organized around occupational or industry themes or function as magnet or theme schools; they differ from comprehensive high schools in that students are generally required to select and complete an occupational program or major. Some of the surveys used for this report are able to identify comprehensive high schools and vocational schools but are unable to distinguish between area vocational schools and full-time vocational high schools.[8]

Measuring Participation in Vocational Education

Except in traditional full-time vocational high schools where graduates are typically required to complete a vocational program of study, most high school students are free to take as much and as varied vocational coursework as they want. Some states have traditionally required that students complete a small number of vocational courses (usually one or two semester-long courses) to graduate. However, the vast majority of public high school graduates take more than 1.0 Carnegie unit of vocational education, and more than half take the equivalent of three or more year-long courses.[9] Moreover, students may take a sequence of related occupational courses, may dabble in different occupational program areas, or may take no specific occupational coursework whatsoever. This report documents the different patterns of participation in vocational education found in public high schools and the trends in such participation over time.

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[6] The National Longitudinal Survey of Youth–1997 was conducted by the Bureau of Labor Statistics with support from the National School-to-Work Office. It contains a school administrator component.

[7] See U.S. Department of Education, Office of Educational Research and Improvement, *National Assessment of Vocational Education Final Report to Congress, Vol. II* (Washington, D.C.: July 1994).

[8] For example, the 1991 and 1994 Schools and Staffing Surveys, which provide information on high school teachers, can identify comprehensive high schools, vocational schools, and "other" schools (including special education schools). In contrast, the 1990 and 1994 High School Transcript Studies do not identify vocational schools separately from other public high schools.

Almost all public high school students take vocational courses. In 1994, 97 percent of public high school students took at least one vocational education course, and 91 percent completed at least one specific occupational course (table 1). However, it can be useful to identify the subset of high school students who complete a sequence of related occupational courses for several reasons. Examining this pattern of participation helps determine whether schools are preparing students adequately for the world of work. It also provides one indication of the size of the vocational enterprise and whether it is growing or shrinking. Completing a sequence of related occupational courses can be examined in conjunction with completing a college preparatory curriculum. That is, to what extent do students complete both courses of study or neither, and what are the trends over time? Additionally, identifying different curriculum pathways makes it possible to examine the outcomes associated with these pathways, such as achievement in high school and subsequent postsecondary and labor market participation.

Table 1—Percentage of public high school graduates completing one or more courses in vocational education, by type of vocational education: 1982–94

Vocational education type	1982	1990	1994
Total	98.2	98.0	97.2
Family and consumer sciences education	50.2	48.1	45.1
General labor market preparation	77.6	68.8	61.1
Specific labor market preparation	88.7	90.6	90.8

SOURCE: U.S. Department of Education, National Center for Education Statistics, High School and Beyond Sophomore Cohort 1982 High School Transcript Study and 1990 and 1994 National Assessment of Educational Progress High School Transcript Studies.

Nonetheless, deciding on appropriate criteria for what constitutes completion of a sequence of related occupational courses is somewhat arbitrary. States and individual high schools have varying definitions of "vocational completion." However, to facilitate our analysis, two definitions were used in this study. The report defines "vocational concentrators" as those public high

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[9] Among 1992 public high school graduates, about 91 percent earned 1.0 or more credits in vocational education, and about 58 percent earned 3.0 or more such credits. See K. Levesque et al., *Vocational Education in the United States: The Early 1990s* (NCES 95-024) (Washington, D.C.: U.S. Department of Education, National Center for Education Statistics, 1995), table 10. In secondary education, a Carnegie unit is awarded for the completion of a course that meets one period per day for one year, or the equivalent. For simplicity's sake, the terms "Carnegie unit" and "credit" will be used interchangeably in this report.

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school graduates who completed 3.0 or more Carnegie units in a single occupational program area, as indicated by the major headings under the "specific labor market preparation" classification in figure 1. A more restrictive definition of "vocational specialization" was defined as completing 4.0 or more Carnegie units in one of these occupational areas, with 2.0 or more of the units taken beyond the introductory level. Because a number of states count students as "vocational completers" if they take 3.0 or more vocational credits, generally the focus here is on the less restrictive definition.

Vocational Education at the Postsecondary Level

Some of the issues facing vocational education at the postsecondary level are similar to those at the high school level, and others are unique.

The Organization and Delivery of Vocational Education

Federal legislation historically defines vocational education as leading to less than a bachelor's degree. Vocational education at the postsecondary level, therefore, covers associate's degree and subbaccalaureate certificate programs. Both 4-year and less-than-4-year postsecondary institutions offer subbaccalaureate vocational programs. Unlike at the high school level, postsecondary vocational education is commonly offered in both the public and private sectors. In all, six main types of postsecondary institutions offer vocational education programs and are included in this report:

- public 4-year institutions
- public 2-year institutions (sometimes referred to as "community colleges")
- public less-than-2-year institutions (sometimes referred to as "vocational–technical institutes")
- private, not-for-profit 4-year institutions
- private, not-for-profit 2-year institutions (which includes all private, not-for-profit less-than-4-year institutions)
- private, for-profit institutions

The designation "4-year" means that the institution awards bachelor's or graduate degrees as its highest degree type. The designation "2-year" means the institution awards associate's degrees or less-than-4-year, subbaccalaureate certificates as its highest award type. The designation "less-than-2-year" means that the institution does not award degrees but awards subbaccalaureate certificates of less than 2 years in length. Private, for-profit institutions usually offer certificates but may offer other degrees as well.

Figure 2 presents the taxonomy used in this report to classify subbaccalaureate postsecondary majors as either academic or vocational.[10] Some institutions that offer subbaccalaureate programs explicitly identify their programs as either academic or vocational. In some cases, different degrees are awarded, for example, Associate of Arts (A.A.) degrees for completing academic programs and Associate of Science (A.S.) degrees for completing vocational programs. Other institutions do not make this distinction. The taxonomy in figure 2 provides a uniform standard for classifying majors as either academic or vocational that is independent of institutional differences.[11]

Most of the reforms advocated for high school vocational education have also been advocated for postsecondary vocational education. These include integration of academic and vocational education, tech prep, work-based learning, and performance measures.

Measuring Participation in Vocational Education

As at the high school level, postsecondary students participate in vocational education to varying degrees and with different intentions. Certain students enter postsecondary institutions with a specific course of study in mind. In some cases, students must apply and be accepted to a vocational program or otherwise formally enroll. For example, associate's degree nursing programs are often in such great demand that they require formal admission. Some shorter-term vocational certificate programs with a set course of study that students pursue as a cohort also require formal enrollment. In many cases, however, postsecondary students are responsible for their own course enrollment and select from a broad range of academic and vocational courses each semester. Students who have clear degree intentions may follow the recommended course of study for a program that is laid out in the institution's course catalog. However, many students may explore different types of coursework before settling on a "major." Others may enroll for credit but do not have clear intentions of completing a degree or certificate program. Still others may have specific short-term goals for obtaining new skills that do not involve certificate or

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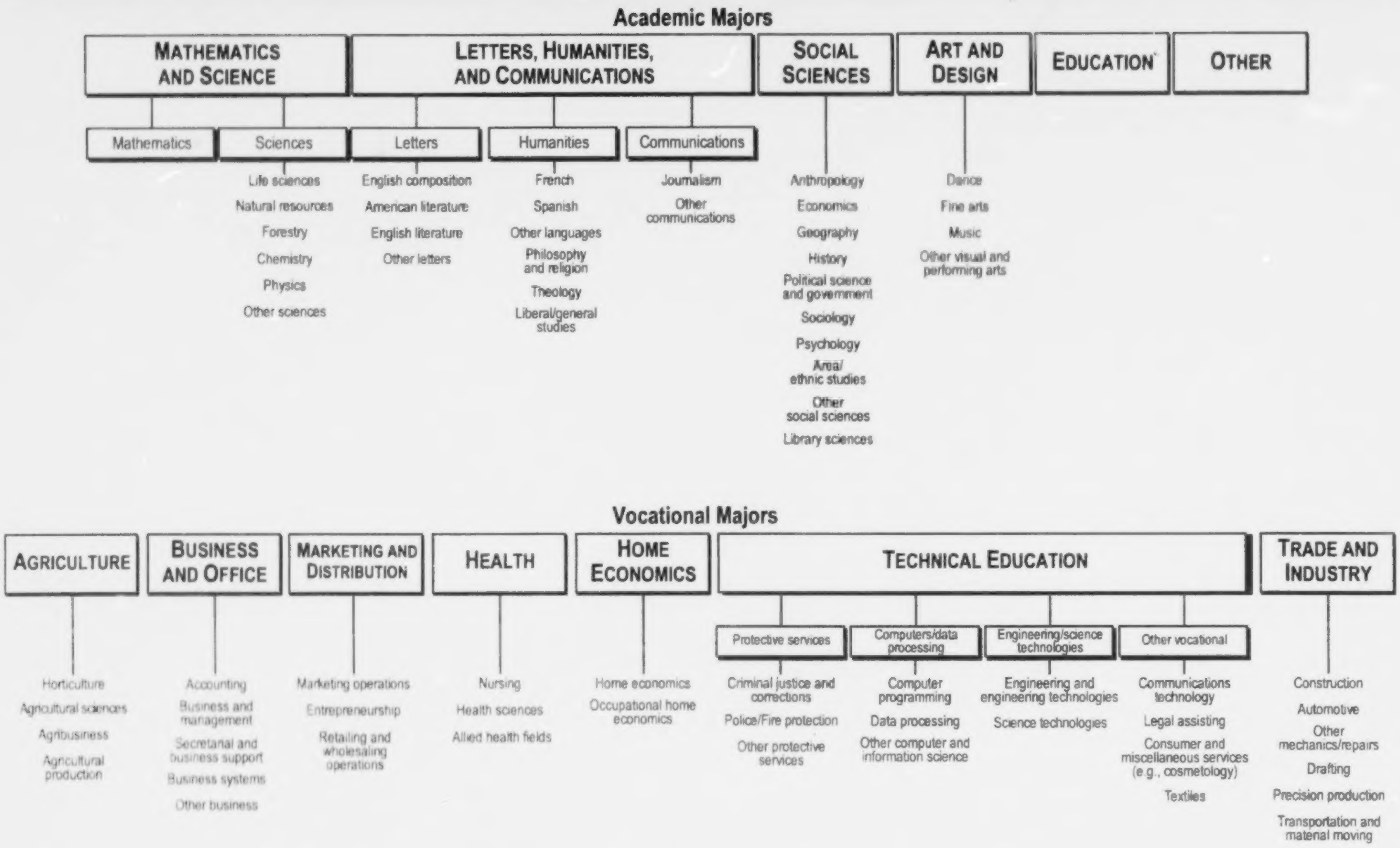
[10] All for-credit vocational coursework at the postsecondary level is considered to be specific labor market preparation. For-credit postsecondary vocational education does not have the equivalent of family and consumer sciences education and general labor market preparation, which are found at the high school level, although not-for-credit courses may include some similar coursework. Information on not-for-credit "adult" or "continuing" education courses is generally not available from the surveys used in this report and, therefore, is not covered in much depth in this publication.

[11] Some small changes have been made to the taxonomy since it was used in the previous two reports.

FIGURE 2—CLASSIFICATION OF ACADEMIC AND VOCATIONAL MAJORS FOR SUBBACCALAUREATE POSTSECONDARY PROGRAMS


Academic Majors
MATHEMATICS AND SCIENCE
Mathematics
Sciences
Life sciences
Natural resources
Forestry
Chemistry
Physics
Other sciences
LETTERS, HUMANITIES, AND COMMUNICATIONS
Letters
English composition
American literature
English literature
Other letters
Humanities
French
Spanish
Other languages
Philosophy and religion
Theology
Liberal/general studies
Communications
Journalism
Other communications
SOCIAL SCIENCES
Anthropology
Economics
Geography
History
Political science and government
Sociology
Psychology
Area/ethnic studies
Other social sciences
Library sciences
ART AND DESIGN
Dance
Fine arts
Music
Other visual and performing arts
EDUCATION
OTHER
Vocational Majors
AGRICULTURE
Horticulture
Agricultural sciences
Agribusiness
Agricultural production
BUSINESS AND OFFICE
Accounting
Business and management
Secretarial and business support
Business systems
Other business
MARKETING AND DISTRIBUTION
Marketing operations
Entrepreneurship
Retailing and wholesaling operations
HEALTH
Nursing
Health sciences
Allied health fields
HOME ECONOMICS
Home economics
Occupational home economics
TECHNICAL EDUCATION
Protective services
Criminal justice and corrections
Police/Fire protection
Other protective services
Computers/data processing
Computer programming
Data processing
Other computer and information science
Engineering/science technologies
Engineering and engineering technologies
Science technologies
Other vocational
Communications technology
Legal assisting
Consumer and miscellaneous services (e.g., cosmetology)
Textiles
TRADE AND INDUSTRY
Construction
Automotive
Other mechanics/repairs
Drafting
Precision production
Transportation and material moving

SOURCE: Adapted from Susan P. Choy and Laura J. Horn, *A Guide to Using Postsecondary Transcript Data and an Overview of Course Taking in Less-than-Four-Year Postsecondary Institutions* (Berkeley: National Center for Research in Vocational Education, March 1992).

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degree completion. Most of the postsecondary data included in this report were derived from surveys of students enrolled for credit in postsecondary institutions.

If postsecondary transcript data were available, it would be interesting to explore the different paths and combinations of coursework that subbaccalaureate students take. However, no such recent data are available.[12] Instead, this publication relies on self-reported degree intentions and major fields to identify subbaccalaureate students and classify them by their reported majors as either academic or vocational (or not reported). For this reason, the postsecondary analysis in this report is less extensive and detailed than the high school analysis, which had access to course enrollment data contained in high school transcripts. Additionally, comparable data were generally available beginning in 1990, shortening the timeframe over which postsecondary trends could be analyzed.[13]

Content and Structure of the Report

Policymakers and vocational educators need information about the status and direction of vocational education in the United States. To respond to these information needs, this report addresses the following questions:

- What are the major national economic and labor market trends and their implications for vocational education programs and policies?
- What skills do employers value, and how have skill requirements and worker proficiency changed in recent years?
- How large is the vocational education enterprise at both the secondary and postsecondary levels, and is it growing, shrinking, or holding constant over time?
- What types of vocational education do students take at each level, and how much do they take?
- Who participates in vocational education, and is this changing?

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[12] High School and Beyond collected postsecondary transcripts for 1982 high school graduates. The Fourth Follow-up of the National Education Longitudinal Study of 1988 survey in 2002 may collect transcript data for 1992 high school graduates. The Beginning Postsecondary Students survey does not plan to collect transcripts for the 1989–90 cohort.

[13] The 1987 National Postsecondary Student Aid Survey (NPSAS) gathered data on students enrolled in postsecondary institutions only during the fall semester. Subsequent NPSAS surveys, usually administered about every 3 years, gathered data for students enrolled during the entire academic year. To maintain comparable student samples, the 1990 and 1996 NPSAS surveys were selected for the trend analysis in this report.

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- Is the academic preparation of students who participate in vocational education improving over time?
- What is the role of work experience and work-based learning in students' courses of study?
- To what extent have recent vocational education reform efforts taken hold at the local level?
- What are the postsecondary and labor market outcomes associated with participation in vocational education?
- What are the trends in vocational teacher qualifications and experience over time?
- In what types of professional development do vocational teachers participate?

Sources of Information

To address the above questions, the authors analyzed data from nine separate national surveys sponsored by one of three federal statistical agencies: NCES, the Bureau of Labor Statistics (BLS), and the Census Bureau. The surveys were administered to representative samples of students, teachers, adults in the general population, schools, and/or employers. The following is a list of the databases analyzed for each section of the report:

Employer Perspectives

- First and Second *National Employer Surveys*[14] (describing private, for-profit employers with 20 or more employees in 1994 and 1997)

Trends in Secondary Vocational Education

- *High School and Beyond* Sophomore Cohort Surveys and High School Transcript Study (describing 1982 high school graduates)
- *High School Transcript Studies* of 1990 and 1994 (describing 1990 and 1994 high school graduates)

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[14] These surveys were administered by the U.S. Bureau of the Census. They were designed by the National Center on the Educational Quality of the Workforce at the University of Pennsylvania, which was funded by the Office for Educational Research and Improvement, U.S. Department of Education.

- *National Education Longitudinal Study of 1988* Surveys, Assessment File, and High School Transcript Study (describing 1992 high school graduates)
- *National Longitudinal Study of Youth–1997* (describing schools with a 12th grade)[15]
- *Schools and Staffing Surveys* of 1991 and 1994 (describing high school teachers)

Transitions After High School

- *High School and Beyond* Third and Fourth Follow-up Surveys (describing outcomes for 1982 high school graduates, 2 and 10 years after graduation)
- *National Education Longitudinal Study of 1988* Third Follow-up Survey (describing outcomes for 1992 high school graduates, 2 years after graduation)

Trends in Postsecondary Vocational Education

- *Current Population Surveys* of 1990, 1991, 1994, and 1996, October supplements (describing adults in the general U.S. population)
- *National Postsecondary Student Aid Studies* of 1990 and 1996 (describing students enrolled for credit in postsecondary institutions)
- *Beginning Postsecondary Students Longitudinal Study* of 1990, Base Year through Second Follow-up (describing outcomes for students who began their postsecondary education for the first time in 1989–90, 4 years later in 1994)

The data sets and the analytic methods used in this report are described in detail in appendix B.

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[15] Unfortunately, due to an error during the design stage, vocational schools were excluded from the sample. Consequently, the survey generally describes comprehensive high schools and, therefore, may provide a conservative estimate of local reform efforts.

II. The Context

The trends toward a service- and information-based economy in recent decades have two important implications for vocational education programs. These trends signal an ongoing shift in the education and training fields that are required of the U.S. work force as well as the levels of that education and training. In order to prepare students for the industries and occupations of the 21st century, it is crucial for vocational educators and policymakers to understand the transitions taking place. This chapter summarizes the current literature on economic and labor market trends and provides a context for understanding the data in the following chapters.

ECONOMIC TRENDS

Defining Key Terms

A clear discussion of the trend toward a service-based economy demands that key terms be defined. Confusion can arise because the terms "service-producing industries," the "services industry," "service-producing occupations," and "service occupations" refer to four distinct but overlapping phenomena. Figure 3 illustrates the relationships among several of these concepts. At the most fundamental level, industrial classification systems typically divide employment into two main sectors: service-producing and goods-producing industries. Service-producing industries encompass transportation, communications, and public utilities; wholesale and retail trade; finance, insurance, and real estate; government; and "services." Goods-producing industries encompass agriculture, mining, construction, and manufacturing.[16] At times, economists compare the service-producing industries and goods-producing industries. At other times, they compare two major industry groups within these broad sectors: the services industry and the manufacturing industry. In 1997, the broader "service-producing industries" classification covered 74.4 percent of total employment in the U.S.; the narrower "services industry" classification covered 35.8 percent of total employment (figure 3 and table 2a).

The services industry includes a broad variety of activities, such as health care, advertising, computer and data processing services, personnel supply, private education, social services, legal

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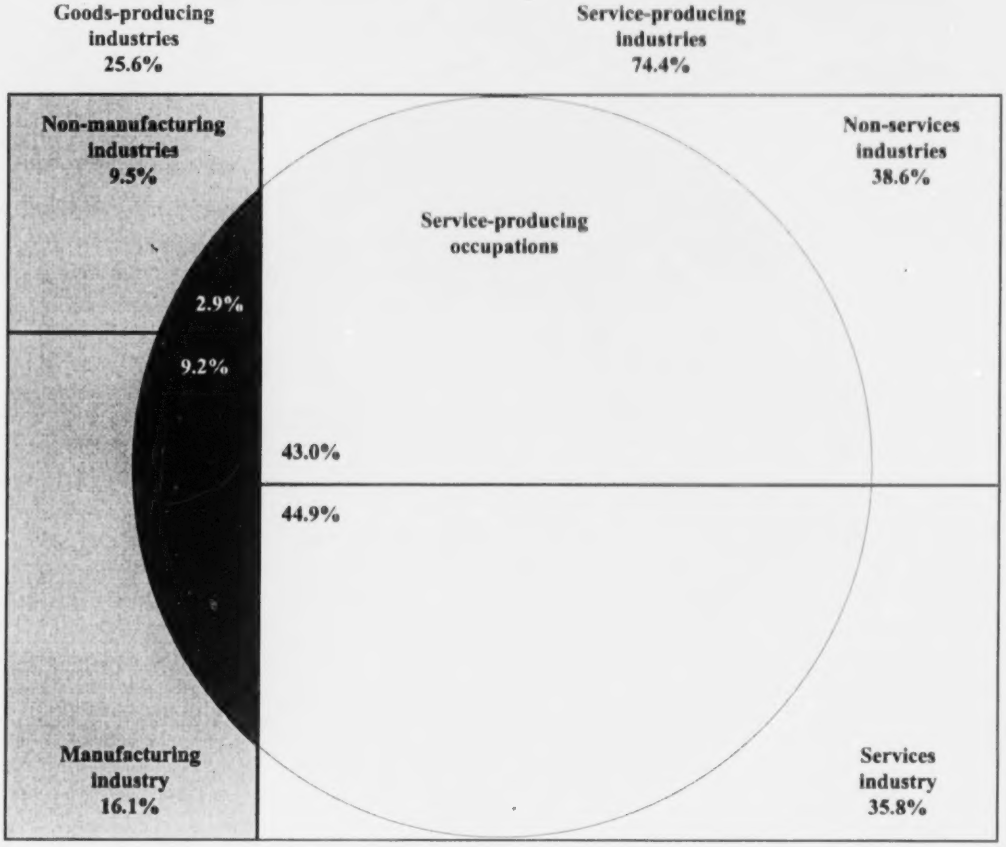
[16] Sometimes discussion about the goods-producing sector excludes agricultural employment.

Figure 3—Percentage distribution of total employment, by sector and type of industry, and percentage distribution of service-producing occupations by sector and type of industry: 1997



SOURCE: (Derived from tables 2a and 2b.) U.S. Department of Commerce, Bureau of the Census, Current Population Survey, 1997, unpublished data.

services, management and public relations, engineering and architectural services, accounting, and recreation. The services industry includes establishments as diverse as Microsoft™ and 24 Hour Fitness.™ The manufacturing industry encompasses both durable and nondurable goods production.

To complicate matters further, "service-producing occupations" and "service occupations" do not overlap neatly with either of the industrial classifications. Service-producing occupations encompass managerial and professional specialty occupations, technicians and related support, sales and administrative support (including clerical), and "service occupations." The narrower

Table 2a—Column percentage distribution of U.S. workers employed in service-producing and goods-producing occupations according to industry: 1997

	1997 Occupational classification								
		Service-producing occupations					Goods-producing occupations		
Industry	Total all occupations	Total	Managerial and professional specialty	Technicians and related support	Sales and administrative support, including clerical	Service	Total	Precison production, craft, repair, operators, fabricators, and laborers	Farming, forestry, and fishing
Total all industries	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Goods-producing industries	25.6	12.1	17.5	19.2	10.5	1.9	60.7	58.2	84.0
Agriculture	2.6	0.5	0.5	1.1	0.5	0.1	8.2	0.4	80.6
Mining	0.5	0.3	0.4	0.6	0.2	0.0	1.1	1.2	0.0
Construction	6.4	2.1	3.8	1.1	1.5	0.2	17.5	19.3	0.6
Manufacturing	16.1	9.2	12.8	16.4	8.3	1.5	34.0	37.4	2.7
Service-producing industries	74.4	87.9	82.5	80.8	89.5	98.1	39.3	41.6	16.0
Transportation and public utilities	7.1	5.4	4.8	8.1	7.6	1.7	11.6	12.8	0.5
Wholesale and retail trade	20.7	23.3	8.0	4.8	39.5	29.1	13.9	15.1	2.9
Finance, insurance, and real estate	6.4	8.6	7.3	3.6	14.2	1.8	0.7	0.7	1.1
Services, except professional	11.9	13.0	11.7	9.0	8.6	25.2	9.2	9.3	8.3
Professional services	23.9	31.9	44.9	50.1	15.8	31.0	3.0	3.1	2.7
Public administration	4.4	5.8	5.9	5.2	3.9	9.4	0.9	0.9	0.7

NOTE: Percentages may not add to 100 due to rounding. Estimates appearing as 0.0 may be nonzero but less than 0.05.

SOURCE: U.S. Department of Commerce, Bureau of the Census, Current Population Survey, 1997, unpublished data.

service occupations category covers, for example, janitors and cleaners, food preparation workers, waiters and waitresses, nursing aides and orderlies, home health aides, correction officers, and guards. Thus, service-producing occupations include managers in agribusiness companies and computer technicians in high-technology firms, as well as service occupations such as McDonalds'™ cooks and janitors at General Motors.™

In 1997, the broader "service-producing occupations" classification covered 72.2 percent of total employment in the U.S.; the narrower "service occupations" classification covered 13.5 percent of total employment (table 2b). Although most service-producing occupations occur in service-producing industries, 12.1 percent of these occupations occur in goods-producing industries (figure 3 and tables 2a). In contrast, the vast majority of service occupations (98.1 percent) occur in service-producing industries, although just 56.2 percent occur in the services industry (table 2a).

Table 2b—Row percentage distribution of U.S. workers employed in service-producing and goods-producing industries according to occupation: 1997

	1997 Occupational classification								
		Service-producing occupations					Goods-producing occupations		
Industry	Total all occupations	Total	Managerial and professional specialty	Technicians and related support	Sales and administrative support, including clerical	Service	Total	Precision production, craft, repair, operators, fabricators, and laborers	Farming, forestry, and fishing
Total all industries	100.0	72.2	29.1	3.3	26.3	13.5	27.8	25.1	2.7
Goods-producing industries	100.0	34.1	19.9	2.4	10.8	1.0	65.9	57.0	8.9
Agriculture	100.0	13.5	6.1	1.4	5.3	0.7	86.6	3.6	83.0
Mining	100.0	39.1	22.6	3.9	12.0	0.6	60.9	60.7	0.2
Construction	100.0	24.2	17.2	0.5	6.0	0.4	75.8	75.5	0.3
Manufacturing	100.0	41.2	23.1	3.3	13.5	1.3	58.8	58.3	0.5
Service-producing industries	100.0	85.3	32.3	3.5	31.7	17.9	14.7	14.1	0.6
Transportation and public utilities	100.0	54.6	19.5	3.7	28.1	3.3	45.4	45.2	0.2
Wholesale and retail trade	100.0	81.3	11.3	0.8	50.2	19.1	18.7	18.3	0.4
Finance, insurance, and real estate	100.0	96.8	33.0	1.8	58.3	3.7	3.2	2.7	0.5
Services, except professional	100.0	78.5	28.6	2.5	18.9	28.6	21.5	19.6	1.9
Professional services	100.0	96.5	54.6	6.8	17.5	17.6	3.5	3.2	0.3
Public administration	100.0	94.4	38.7	3.9	23.3	28.7	5.6	5.2	0.4

NOTE: Percentages may not add to 100 due to rounding.

SOURCE: U.S. Department of Commerce, Bureau of the Census, Current Population Survey, 1997, unpublished data.

Ascendance of Services

At the beginning of the 20th century, the U.S. economy was in the midst of a massive transition, one that involved workers moving from agriculture into industry. At the end of the 20th century, the economy is again in a state of flux, with more and more workers finding employment in the services industry as opposed to manufacturing. In 1945, the services industry accounted for 10 percent of nonfarm employment, compared with 38 percent for manufacturing. By 1996, services accounted for 29 percent of nonfarm employment, while manufacturing declined to 15 percent.[17] These trends are expected to continue into the 21st century. The Bureau of Labor

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[17] See J.R. Meisenheimer II, "The Services Industry in the 'Good' Versus 'Bad' Jobs Debate," *Monthly Labor Review* (February 1998): 22–47.

Statistics projects that the service-producing sector will create virtually all of the new jobs between 1996 and 2006, with almost two-thirds of these jobs in the services industry.[18]

Some have argued that services industry jobs are not as good as manufacturing jobs and that the trend toward services is therefore worrisome for the American worker.[19] However, research shows that the services industry is very diverse and that the shift from manufacturing to services does not necessarily signal a deterioration in overall job quality.[20] In 1996, average hourly earnings for workers in the services industry was $11.79—about 92 percent of the $12.78 average for manufacturing workers. The wage differential between these two industries had narrowed considerably since 1964, when average hourly earnings in services were 77 percent of the manufacturing average.[21] In 1996, the distribution, or spread, of earnings was similar for the two industries, so that one could not simply be labeled "low wage" and the other "high wage." A comprehensive assessment of job quality that examined employee benefits, job security, occupational structure, and occupational safety, in addition to average wages, found that the services industry was very diverse in terms of job quality and that many service jobs compared favorably with those in manufacturing.[22]

The types of employment covered under service-related classifications is very broad. Service-producing occupations cover anyone from filing clerks to chief executive officers, and service-producing industries cover anything from fast-food restaurants to corporate banks. Consequently, the shift to a service-based economy describes a complex process that encompasses both low- and high-wage jobs, requires varying skill levels, and presents a broad range of employment opportunities.

The Emerging Information Economy

What accounts for the decline of manufacturing and the movement toward a service-based economy? The decline of manufacturing is often referred to as "economic restructuring," a term that encompasses technological change and new competitive pressures on firms. Assessing the impact of economic restructuring, though, is not a simple matter and is subject to much debate in the economic literature and the popular press. The work of Paul Krugman, Jeffrey Sachs, Howard

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[18] J.C. Franklin, "Industry Output and Employment Projections to 2006," *Monthly Labor Review* (November 1997): 39–57.

[19] See, for example, L. Mishel and J. Simon, "The State of Working America," *Challenge* (November-December 1988): 50–51; and M. Mahar, "Blue Collar, White Collar: Good Jobs Are Vanishing Throughout the Economy," *Barron's* (May 11, 1992): 8–24.

[20] See J.R. Meisenheimer II, "The Services Industry in the 'Good' Versus 'Bad' Jobs Debate" (February 1998).

[21] The narrowing of the wage gap may be due in part to increases over the years in service-related employment associated with high technology, particularly in the computer, telecommunications, and health fields. Additionally, the narrowing wage gap may be due in part to increasing demand for services employment and slackening demand for manufacturing employment.

[22] See J.R. Meisenheimer II, "The Services Industry in the 'Good' Versus 'Bad' Jobs Debate" (February 1998).

Shatz, and Gary Burtless contradicts the prevalent assumption that international trade is the main cause of widespread changes in the manufacturing sector during the past 30 years.[23]

There is more consensus about the role that technology has played in the growth of the service sector. The U.S. economy is in the midst of what Alan Greenspan calls a "once-in-a-century event," a "structural technological advance" in information technology that is changing the shape of the economy and the nature of work.[24] He argues that development of the transistor and integrated circuit and the resulting explosion of advancements in the computing and telecommunications technologies have fundamentally changed the structure of the American economy. Much like the industrial revolution, which caused people to move from working in the fields to working in factories, advances in information technology are causing employment to shift from factories to service-producing firms.

As a result, major industrialized economies are becoming "knowledge-based," where the creation, distribution, and use of information and knowledge—including both technology and human capital—are becoming increasingly important. According to some calculations, more than half of the total gross domestic product in the major industrialized economies is now knowledge-based, including industries such as telecommunications, computers, software, pharmaceuticals, education, and television.[25] High-technology industries have almost doubled their share of manufacturing output over the past two decades to around 25 percent, and knowledge-intensive services are growing even faster.[26] By one reckoning, "knowledge workers," from brain surgeons to journalists, account for 8 out of every 10 new jobs.[27]

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[23] P. Krugman, *Pop Internationalism* (Cambridge and London: MIT Press, 1997); J. Sachs and H. Shatz, "Trade and Jobs in U.S. Manufacturing," *Brookings Papers on Economic Activity I* (1994): 1-84; and G. Burtless, "International Trade and the Rise in Earnings Inequality," *Journal of Economic Literature* 23 (June 1995): 800–816. For an alternate viewpoint, see G.J. Borjas and V.A. Ramey, "The Relationship Between Wage Inequality and International Trade," in J.H. Bergstrand et al., eds., *The Changing Distribution of Income in an Open U.S. Economy* (Amsterdam, North-Holland: 1994), 217–242; and A. Wood, *North-South Trade, Employment, and Inequality: Changing Fortunes in a Skill-Driven World* (Oxford: Clarendon Press, 1994).

[24] A. Greenspan, "Job Insecurity and Technology," address given at the Federal Reserve Bank of Boston's Conference on Technology and Growth, June 1996.

[25] Organisation for Economic Co-operation and Development (OECD), *Employment and Growth in the Knowledge-Based Economy* (Paris: 1996).

[26] P. Woodall, "A Survey of the World Economy: A Hitchhiker's Guide to Cybernomics," *The Economist* 340 (7985) (Sept. 28, 1996): S3–S5.

[27] Ibid.

LABOR MARKET TRENDS

Against the backdrop of the shift toward a service- and information-based economy, this section describes occupational trends and changing education and skill requirements.

Occupational Trends

In order to understand occupational trends clearly, it is important to draw the distinction between "fast-growing occupations" and those with "large job growth." A fast-growing occupation—one, for example, that doubles the number of jobs over a 10-year period—may add only a small absolute number of jobs to the economy. In contrast, a slow-growing occupation, one that increases only 10 or 20 percent over a 10-year period, may add a large absolute number of jobs, because it began with a much larger employment base. Fast-growing occupations may receive a lot of attention because they represent "emerging" occupations and, possibly, are the wave of the future. However, it is important to consider the contribution of occupations with large job growth as well as these fast-growing occupations, in order to have a complete employment picture.

The Department of Labor's Bureau of Labor Statistics (BLS) periodically publishes employment outlooks that make projections about the fastest-growing occupations and those with the largest job growth. A recent report, published in November 1997, makes projections for the period from 1996 to 2006.[28]

Among the major occupational groups, employment in professional specialty occupations is projected to increase the fastest and add the most jobs between 1996 and 2006 (table 3). The group with the second fastest growth rate is projected to be technicians and related support occupations, although this group is small and is not expected to add a large number of jobs. The next fastest growing group is service occupations, which together with professional specialty occupations are projected to add nearly half of all new jobs from 1996 and 2006.

Among detailed occupations, the 10 occupations with the highest projected growth rates are all service-producing occupations, and they can be classified in either the computer technology or health fields (table 4a). Between 1996 and 2006, these occupations are projected to grow from 69 to 117 percent, while the average growth rate for all occupations is projected to be 14 percent over the same period. However, these fastest growing occupations are projected to make up 3 percent of all jobs by the year 2006.

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[28] See G. Silvestri, "Occupational Employment Projections to 2006," *Monthly Labor Review* (November 1997): 58–83.

Table 3—Employment by major occupational group: 1996 and projected 2006

Occupational group	Employment 1996 (in thousands of jobs)	 2006 (in thousands of jobs)	Change Number (in thousands of jobs)	 Percent
All occupations	132,353	150,927	18,574	14.0
Executive, administrative, and managerial	13,542	15,866	2,324	17.2
Professional specialty	18,173	22,998	4,826	26.6
Technicians and related support	4,618	5,558	940	20.4
Marketing and sales	14,633	16,897	2,264	15.5
Administrative support, including clerical	24,019	25,825	1,806	7.5
Service	21,294	25,147	3,853	18.1
Agriculture, forestry, fishing, and related occupations	3,785	3,823	37	1.0
Precision production, craft, and repair	14,446	15,448	1,002	6.9
Operators, fabricators, and laborers	17,843	19,365	1,522	8.5

SOURCE: G. Silvestri, "Occupational Employment Projections to 2006," *Monthly Labor Review*, Bureau of Labor Statistics, Office of Employment Projections, November 1997.

Table 4a—Employment in the 10 projected fastest-growing occupations: 1996 and projected 2006

Occupations	Employment 1996 (in thousands of jobs)	 2006 (in thousands of jobs)	Change Number (in thousands of jobs)	 Percent	Quartile rank by 1996 median weekly earnings of full-time workers	Education and training category
All occupations	132,353	150,927	18,574	14	—	—
			Ten fastest-growing occupations: 1996–2006			
1. Database administrators, computer support specialists, and all other computer scientists	212	461	249	117	1	Bachelor's degree
2. Computer engineers	216	451	235	109	1	Bachelor's degree
3. Systems analysts	506	1,025	520	103	1	Bachelor's degree
4. Personal and home care aides	202	374	171	85	4	Short-term on-the-job training
5. Physical and corrective therapy	84	151	66	79	4	Moderate-term on-the-job train
6. Home health aides	495	873	378	76	4	Short-term on-the-job training
7. Medical assistants	225	391	166	74	3	Moderate-term on-the-job train
8. Desktop publishing specialists	30	53	22	74	2	Long-term on-the-job training
9. Physical therapists	115	196	81	71	1	Bachelor's degree
10. Occupational therapy assistants and aides	16	26	11	69	3	Moderate-term on-the-job train
Total	2,101	4,001	1,899	90	—	
Share of all jobs (percent)	1.6	2.7	10.2	—	—	

—Not applicable.

SOURCE: G. Silvestri, "Occupational Employment Projections to 2006," *Monthly Labor Review*, Bureau of Labor Statistics, Office of Employment Projections, November 1997.

The 10 detailed occupations with the largest projected increases in number of jobs are somewhat more varied, although they also include several health occupations (table 4b). These occupations are projected to make up 16 percent of total employment by 2006. Only systems analysts and home health aides are included on both lists. Nine of the 10 occupations with the largest projected numeric increases will grow at average or above-average rates. The retail sales occupation, projected to grow at a 10 percent rate, is expected to add more jobs than all but one of the fastest-growing occupations listed in table 4a.[29]

Table 4b—Employment in the 10 occupations with largest projected job growth: 1996 and projected 2006

Occupations	Employment 1996 (in thousands of jobs)	Employment 2006 (in thousands of jobs)	Change Number (in thousands of jobs)	Change Percent	Quartile rank by 1996 median weekly earnings of full-time workers	Education and training category
All occupations	132,353	150,927	18,574	14	—	—
Ten occupations with largest job growth: 1996–2006						
1. Cashiers	3,146	3,677	530	17	4	Short-term on-the-job training
2. Systems analysts	506	1,025	520	103	1	Bachelor's degree
3. General managers and top executives	3,210	3,677	467	15	1	Work experience plus bachelor's or higher degree
4. Registered nurses	1,971	2,382	411	21	1	Associate's degree
5. Salespersons, retail	4,072	4,481	408	10	3	Short-term on-the-job training
6. Truck drivers, light and heavy	2,719	3,123	404	15	2	Short-term on-the-job training
7. Home health aides	495	873	378	76	4	Short-term on-the-job training
8. Teacher aides and educational assistants	981	1,352	370	38	4	Short-term on-the-job training
9. Nursing aides, orderlies, and attendants	1,312	1,645	333	25	4	Short-term on-the-job training
10. Receptionists and information clerks	1,074	1,392	318	30	4	Short-term on-the-job training
Total	19,486	23,627	4,139	21	—	
Share of all jobs (percent)	14.7	15.7	22.3	—	—	

—Not applicable.

SOURCE: G. Silvestri, "Occupational Employment Projections to 2006," *Monthly Labor Review*, Bureau of Labor Statistics, Office of Employment Projections, November 1997.

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[29] It should be remembered that BLS projections are based on past performance rather than anticipated developments or innovations, and may under- or over-predict the growth of some jobs.

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Changing Education and Skill Requirements

Workforce 2000 estimated that more than half of new jobs between 1984 and 2000 would require some education beyond high school, and one-third would require a bachelor's degree or more.[30] More recent projections anticipate that average growth will be greater for occupations requiring at least an associate's degree than for occupations requiring less education.[31] Indeed, the 10 occupations with the highest projected growth rates in table 4a have relatively high education and training requirements (8 require bachelor's degrees or moderate- to long-term on-the-job training). In contrast, however, the 10 occupations with the highest projected increases in number of jobs have relatively low education and training requirements (7 require no more than short-term on-the-job training) (table 4b). While some emerging occupations require high education and training requirements, the majority of jobs still demand relatively low education and training levels. In 1996, 39 percent of all jobs required no more than short-term on-the-job training (table 5).

Table 5—Employment and median weekly earnings by education and training category: 1996

Education and training category	Employment Number (in thousands of jobs)	Employment Percentage distribution	Median weekly earnings, full-time workers
All occupations	132,353	100.0	$483
First-professional degree	1,707	1.3	1,057
Doctoral degree	1,016	0.8	847
Master's degree	1,371	1.0	682
Work experience plus bachelor's or higher degree	8,971	6.8	786
Bachelor's degree	15,821	12.0	686
Associate's degree	4,122	3.1	639
Postsecondary vocational training	8,091	6.1	444
Work experience in a related occupation	9,966	7.5	534
Long-term on-the-job training	12,373	9.3	490
Moderate-term on-the-job training	16,792	12.7	434
Short-term on-the-job training	52,125	39.4	337

NOTE: Details may not add to totals due to rounding.

SOURCE: G. Silvestri, "Occupational Employment Projections to 2006," *Monthly Labor Review*, Bureau of Labor Statistics, Office of Employment Projections, November 1997.

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[30] W. Johnston and A. Packer, *Workforce 2000: Work and Workers for the 21st Century* (Indianapolis: Hudson Institute for the U.S. Department of Labor, 1987).

[31] See G. Silvestri, "Occupational Employment Projections to 2006," *Monthly Labor Review* (November 1997): 58–83.

Some changes in business practices are demanding greater skills of workers. Increased global competition since World War II has spurred some U.S. businesses to create "high-performance workplaces," relying on flexible and decentralized work practices and multiskilled workers. Although a growing number of firms are adopting high-performance characteristics, some claim this trend will probably affect only a small number of firms clustered in a few industrial sectors.[32] To the extent that new business practices are adopted, there may be some increase in the required skills of front-line workers. Some have argued that front-line production workers will need to be proficient at using a range of machines and will need to demonstrate increased flexibility, problem-solving, responsibility, teamwork, initiative, and care and attention, especially in monitoring automated equipment.[33]

Some have also argued that the shift to a service-based economy increases the need for critical-thinking and social skills. For example, jobs that require direct contact with customers and clients require problem solving, responsibility, and social skills.[34] Additionally, while customer service occupations (such as cooks, nursing aides, secretaries, clerical workers, and cashiers) may require only modest technical skill levels, workers in these occupations are expected to possess social, communication, problem-solving, and basic academic skills.[35]

Generally, research has shown that obtaining workers with a good work ethic and appropriate social behavior has been a priority for employers. Employers complain about the attitude and character of workers—particularly about absenteeism, an inability to adapt, a lack of discipline, and negative work behaviors.[36] In response to criticisms about the general employability of the work force, the Secretary's Commission on Achieving Necessary Skills (SCANS) identified a range of skills that all work force participants should have.[37] These include the following:

Basic Skills
Reading
Writing
Arithmetic
Mathematics

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[32] S. Klein and R. Vergun, *Workplace Skill Requirements: The Upskilling vs. Deskilling Debate* (Washington, D.C.: U.S. Department of Education, National Assessment of Vocational Education, 1994).

[33] H. Shaiken, S. Herzenberg, and S. Kuhn, "The Work Process Under More Flexible Production," *Industrial Relations* 25 (2) (Spring 1986): 167–182.

[34] P. Adler, "New Technologies, New Skills," *California Management Review* 29 (1) (Fall 1986): 9–28.

[35] P. Capelli, *Are Skill Requirements Rising? Evidence from Production and Clerical Jobs* (Philadelphia: National Center on the Educational Quality of the Workforce, 1991).

[36] P. Capelli, *Is the "Skills Gap" Really About Attitudes?* (Philadelphia: National Center on the Educational Quality of the Workforce, 1992).

[37] U.S. Department of Labor, *Skills and Tasks for Jobs: A SCANS Report for America 2000* (Washington, D.C.: 1990).

Listening
Speaking

Thinking Skills
Creative Thinking
Decision Making
Problem Solving
Seeing Things in the Mind's Eye
Knowing How to Learn
Reasoning

Personal Qualities
Responsibility
Self-Esteem
Sociability
Self-Management
Integrity/Honesty

In summary, the preponderance of the research evidence argues that there are trends toward greater education and training requirements and a greater need for critical-thinking skills, personal responsibility, and social skills among work force participants. However, these trends are not uniform across industries and occupations, and some disagree about their magnitude.

Returns to Education and Training

Research has consistently documented positive labor market returns to increasing educational attainment. For example, both rates of employment and labor force participation rise with educational attainment. In 1996, 39 percent of adults who had not completed high school were employed, while 70 percent of those with at least some college (including those with postsecondary vocational certificates) were employed (table 6). Similarly, more than half (56 percent) of people lacking a high school education were not in the labor force, compared with 27 percent of those with at least some college education. The unemployment rate of those who had not completed high school was twice that of adults with some college education (10 percent versus 4 percent, among labor force participants). Additionally, in 1996, median weekly earnings for full-time workers generally increased as the education and training requirements of an occupation increased (table 5). For example, while workers in jobs requiring no more than short-term on-the-job training earned $337 per week, on average, those with an associate's degree earned almost twice as much ($639).

Table 6—Percentage distribution of all adults aged 18 years or older and of those in the labor force according to their employment status, by educational attainment: 1996

	Of all adults			Adults in labor force	
Educational attainment	Employed	Unemployed	Not in labor force	Employed	Unemployed
Total	65.1	3.2	31.8	95.3	4.7
Less than high school completion	39.4	4.4	56.2	90.0	10.0
High school completion	63.7	3.7	32.6	94.5	5.5
Some college, no degree	69.7	3.0	27.3	95.9	4.2
Associate's degree	77.5	2.6	20.0	96.8	3.2
Bachelor's degree or higher	79.6	1.7	18.7	97.9	2.1

NOTE: Percentages may not add to 100 due to rounding.

SOURCE: U.S. Department of Commerce, Bureau of the Census, October Current Population Survey, 1996.

While there is a consistent and strong association between education and training and labor market success, to some extent, these greater returns may be due to "selection bias." That is, persons attaining higher levels of education may be different from those with lower educational attainment in ways—exclusive of education—that affect labor market success. If this is true, then the impact of obtaining more education and training on success in the labor market, in itself, may be overstated. However, recent increases in income disparities between those with more and less education suggest that there are, in fact, direct returns to education and training.

The trend away from a manufacturing-based economy toward a services-based one has been positive for many individuals and industries.[38] This is not to say, however, that recent changes have benefited everyone. Those without the appropriate education and skills to meet the demands of an increasingly competitive and technical marketplace have watched their wages stagnate and decline over the past 20 years. The rise of information technologies has contributed to the widening inequality in income. Disparities between the more and less educated have increased, and individuals whose work involves less conceptual activities have had either stagnant or falling real income over the past two decades. Table 7 and figure 4 illustrate that income inequality has widened over the period from 1970 to 1995 between holders of high school diplomas and those who have earned bachelor's degrees or higher.

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[38] A. Greenspan, "Job Insecurity and Technology," address given at the Federal Reserve Bank of Boston's Conference on Technology and Growth, June 1996.

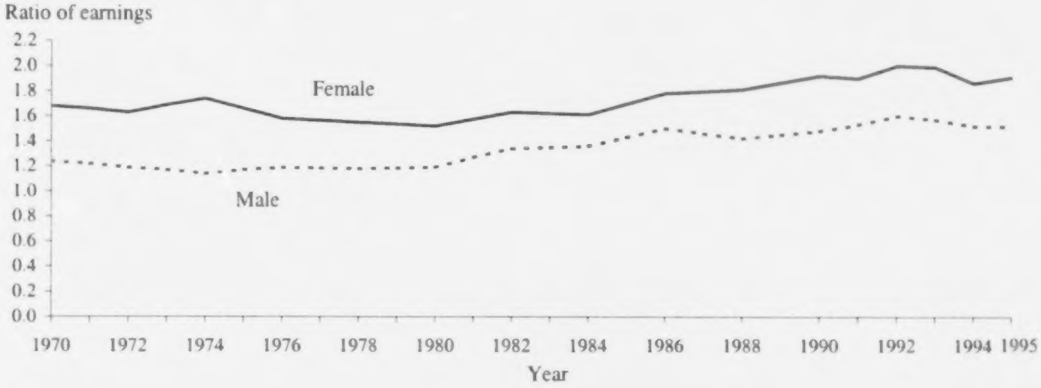
Table 7—Ratio* of median annual earnings of wage and salary workers aged 25–34 whose highest education level was a bachelor's degree or higher to those with a high school diploma, by sex: Selected years 1970–95

Year	Male	Female
1970	1.24	1.68
1972	1.19	1.63
1974	1.14	1.74
1976	1.19	1.58
1978	1.18	1.55
1980	1.19	1.52
1982	1.34	1.63
1984	1.36	1.61
1986	1.50	1.78
1988	1.42	1.81
1990	1.48	1.92
1991	1.53	1.90
1992	1.60	2.00
1993	1.57	1.99
1994	1.52	1.86
1995	1.52	1.91

*This ratio is most useful when compared to 1.0. For example, the ratio of 1.52 in 1995 means that males whose highest education level was a bachelor's degree or higher earned 52 percent more than males who had a high school diploma.

SOURCE: U.S. Department of Commerce, Bureau of the Census, March Current Population Surveys.

Figure 4—Ratio* of median annual earnings of wage and salary workers aged 25–34 with a bachelor's degree or higher to those with a high school diploma, by sex: Selected years 1970–95



*This ratio is most useful when compared to 1.0. For example, the ratio of 1.52 in 1995 means that males whose highest education level was a bachelor's degree or higher earned 52 percent more than males who had a high school diploma.

SOURCE: U.S. Department of Commerce, Bureau of the Census, March Current Population Surveys.

The reported benefits of higher educational attainment are consistent with recent vocational education reforms emphasizing greater academic preparation and further education and training. Research has also shown the following positive employment and earnings outcomes for participants in vocational education:[39]

1) High school students who concentrate their coursework in a vocational field of study have been shown to have better employment and earnings outcomes than those who take fewer than 2.0 credits in a single vocational field;
2) Vocational completers who obtain a job in an occupation that matches their vocational field of study have been shown to outperform their peers who obtain employment in an unrelated field:
3) Female high school students who complete coursework in the business and health fields have been shown to have better outcomes than those who train in other fields. Similarly, both male and female postsecondary students who complete coursework in the health and technical fields have been shown to have better outcomes than those who train in other vocational fields;
4) Students who pursue their vocational studies at a community college have been shown to have better outcomes than students attending other types of postsecondary institutions; and
5) Postsecondary students who complete a vocational program and obtain a degree or certificate have been shown to have better outcomes than those who do not complete or obtain certification.

Participating in vocational education has also been shown to have particular economic benefits for women in general and students with disabilities.

KEY FINDINGS

The following presents a summary of key findings based on the discussion in this chapter:

- The United States is shifting from a manufacturing- to a service- and information-based economy. These trends have two important implications for vocational education programs. They signal an ongoing shift in the education and training fields that are required of the U.S. work force as well as the levels of that education and training.

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[39] D. Boesel, L. Hudson, S. Deich, and C. Masten, "Employment Outcomes," *National Assessment of Vocational Education Final Report to Congress, Vol. II*, Chapter Six (Washington, D.C.: U.S. Department of Education, Office of Educational Research and Improvement, 1994).

- The occupations with the highest projected growth rates are generally in the computer technology and health fields. Those with the highest projected increase in number of jobs are somewhat more varied, although they also include several health occupations.

- While the occupations with the highest projected growth rates have relatively high education and training requirements, those with the highest projected increase in number of jobs have relatively low education and training requirements. Some emerging occupations require high education and training requirements, while the majority of jobs still demand relatively low education and training levels.

- There is consensus in the research literature that there are trends toward greater education and training requirements and a greater need for critical thinking, personal responsibility, and social skills among work force participants. However, these trends are not uniform across industries and occupations, and some disagree about their magnitude.

- Although researchers have long identified the association between increased educational attainment and better labor market outcomes, the disparity in incomes between those with more and less education has increased in recent years. Some argue that this means that education and training are increasingly crucial for narrowing the income gap and for preventing the creation of a society of haves and have nots.

- Research has shown that positive employment and earnings outcomes accrue to participants in vocational education who concentrate their coursework in a vocational field of study in high school, who complete a postsecondary vocational program and obtain a certificate or degree, and who obtain a job in a field related to their vocational education.

IMPLICATIONS FOR DATA ANALYSIS

How might the economic and labor market trends in this chapter be reflected in employer, education, and labor market data? The following is a list of questions to guide readers as they examine the data in the following chapters:

- What skills do employers value and how have skill requirements changed in recent years? Are employers implementing high-performance workplaces?

- What are the trends in specific occupational preparation at the high school and postsecondary levels? Specifically, is there a shift from participation in traditional manufacturing programs (such as trade and industrial programs) toward service-sector and information-age programs (such as health and technology and communications programs)?

- Are high school students enrolling in courses that teach technological skills?

- Are students who participate in high school vocational education more academically prepared than in the past, for either the world of work or postsecondary education?

- Are more students in secondary vocational education programs enrolling in and completing postsecondary education than in the past? Are more adults obtaining postsecondary vocational education credentials than before?

- What are the labor market outcomes for persons concentrating in vocational education programs? How do these outcomes compare with other kinds of preparation?

III. Employer Perspectives

OVERVIEW

This chapter examines how workplaces are changing and how employers view current and prospective employees. The analysis relies on the 1994 and 1997 National Employer Surveys, which gathered data from a random sample of private firms with 20 or more employees. Public and not-for-profit institutions, firms with fewer than 20 employees, and corporate headquarters were not surveyed.[40,41] Additional information on the surveys is provided in appendix B.

Key questions about workplace practices examined in this chapter include the following:

- To what extent are firms becoming "high-performance workplaces"?
- What percentage of firms are participating in school-to-work partnerships?
- What forms does this participation take?

The extent to which firms are becoming "high-performance workplaces" may affect the types of skills demanded of employees. Because "high-performance workplaces" are typically decentralized, they demand flexibility and multiple skills from workers. Additionally, employees need to have good critical-thinking and problem-solving skills, and since they often work in teams, good communication and social skills are also necessary. The National Employer Surveys also asked about employer participation in school-to-work partnerships. These data provide one indication of the extent to which the integration of school- and work-based learning is occurring at the local level.

In this chapter, a number of key questions about employer perspectives on employees are addressed, including the following:

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[40] Because corporate headquarters were not included in the survey sample, and because several local establishments that fall under a single corporate headquarters might have been surveyed, the precise unit of analysis for these surveys is the "work establishment." To simplify the terminology used in this report, this chapter refers to the percentage of "firms" or "employers"—rather than "work establishments"—reporting specific characteristics.

[41] Problems with large nonresponse on certain survey items meant that some of the items could not be used for this report.

- What do employers look for in front-line workers? Is educational attainment important to employers?
- What percentage of front-line workers have postsecondary education?
- Have skill requirements and worker proficiency changed in recent years?
- How do new hires with work experience (such as cooperative education, internships, or apprenticeships) compare with other new hires?

These questions provide a counterpoint to what the research literature says about changing skill requirements. While the general labor market trend may be toward higher education and training requirements, employers have a unique perspective, which is particularly important in the short term. The National Employer Surveys also allow one to examine from the employer point of view whether previous work experience affects performance on the job, particularly for new hires. These findings have important implications for the current emphasis on providing work-based learning experiences to students.

WORKPLACE PRACTICES

High-Performance Workplaces

There is evidence that some employers are transforming their firms into high-performance workplaces, with larger firms being more likely than smaller firms to undergo certain changes. These firms, however, are still in the minority. Both good critical-thinking and social skills are necessary in the decentralized and team-based environment of the high-performance workplace. However, the extent to which these practices will be implemented and these skills be required in the future is uncertain.

- Between 20 and 25 percent of surveyed employers reported some form of high-performance work characteristic in 1997 (table 8). Twenty percent reported performance benchmarking, and one-quarter had recently undergone reengineering. Larger firms were more likely to participate in these activities. On average, about one in five nonsupervisory employees participated in job rotation in 1997, and about 16 percent of nonsupervisory employees worked in self-managed teams.

Table 8—Percentage of employers reporting selected high-performance work characteristics, by firm size: 1994 and 1997

Firm size (number of employees)	Percentage of employers who			Average percentage of nonmanagerial and nonsupervisory employees participating in	
	Adopted total quality management program	Underwent reengineering within past 3 years	Participated in performance benchmarking	Job rotation	Self-managed teams
			1994		
Total	36.6	—	22.7	18.8	13.1
20–49	33.1	—	19.2	21.6	13.8
50–99	37.3	—	24.6	13.7	12.0
100–249	42.6	—	26.2	16.7	12.1
250 or more	59.9	—	47.1	12.1	11.6
		—			
			1997		
Total	—	24.9	20.4	21.7	15.5
20–49	—	20.4	15.6	24.6	16.3
50–99	—	29.2	24.7	16.7	13.9
100–249	—	30.9	28.8	17.8	14.1
250 or more	—	44.9	39.3	18.4	16.5

—Not available.

SOURCE: 1994 National Employer Survey, Phase I, and 1997 National Employer Survey, Phase II. Administered by the U.S. Bureau of the Census; designed and funded by the National Center on the Educational Quality of the Workforce at the University of Pennsylvania.

- In 1994, 37 percent of surveyed employers had adopted Total Quality Management (TQM) practices (table 8). Although larger firms were more likely to report adopting TQM, one-third of firms in the smallest category also reported these practices.

Employer Participation in School-to-Work Activities

Some employers are also participating in school-to-work partnerships and different kinds of work-based learning opportunities for students. Once again, however, these firms are in the minority.

- In 1997, one-quarter of surveyed employers reported participating in a school-to-work partnership (table 9; figure 5). Larger employers were more likely than smaller ones to report such participation.

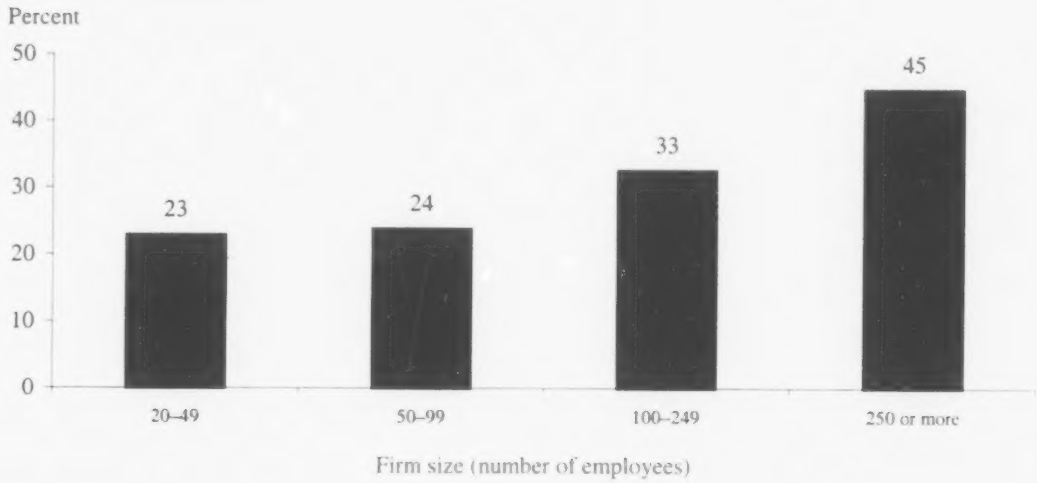
Table 9—Percentage of employers reporting that they were involved in a school-to-work partnership, by firm size: 1997

Firm size (number of employees)	School-to-work partnership
Total	25.4
20–49	22.9
50–99	23.8
100–249	32.6
250 or more	44.7

NOTE: The sample is made up of private, for-profit employers with 20 or more employees.

SOURCE: 1997 National Employer Survey, Phase II. Administered by the U.S. Bureau of the Census; designed and funded by the National Center on the Educational Quality of the Workforce at the University of Pennsylvania.

Figure 5—Percentage of employers reporting that they were involved in a school-to-work partnership, by firm size: 1997



NOTE: The sample is made up of private, for-profit employers with 20 or more employees.

SOURCE: 1997 National Employer Survey, Phase II. Administered by the U.S. Bureau of the Census; designed and funded by the National Center on the Educational Quality of the Workforce at the University of Pennsylvania.

- Forty-two percent of employers in 1997 reported providing at least one formal work-based learning activity (table 10 and figure 6a). Twenty-one percent provided internships, 15 percent job shadowing, 14 percent cooperative education, and 10 percent mentoring. Larger employers and services industry employers were more likely to provide internships and job shadowing than other employers (table 10 and figure 6b).

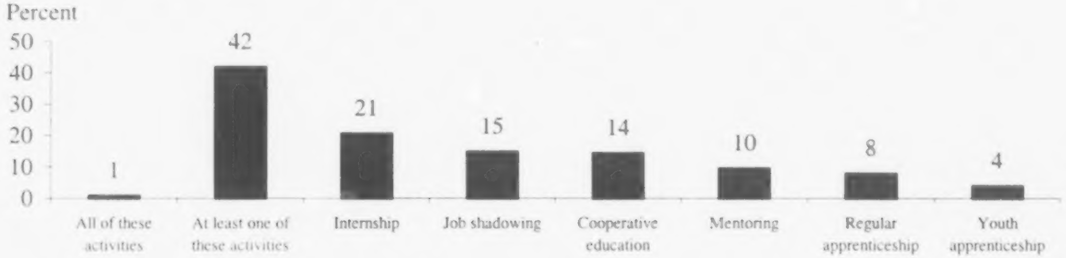
Table 10—Percentage of employers reporting that they participated in selected work-based learning activities, by firm size and type: 1997

Firm size and type	All of these activities	At least one of these activities	Internship	Job shadowing	Co-operative education	Mentoring	Regular apprenticeship	Youth apprenticeship
Total	0.8	41.9	20.6	14.8	14.4	9.5	7.8	3.9
Firm size (number of employees)								
20–49	1.3	35.2	17.0	14.6	12.2	9.2	8.1	4.3
50–99	0.0	47.1	18.9	13.0	15.4	7.7	7.4	3.0
100–249	0.2	54.2	29.3	14.9	19.1	10.6	7.4	3.6
250 or more	0.4	68.5	48.6	24.6	24.0	19.4	7.4	3.7
Firm type								
Construction, manufacturing, and transportation	0.0	39.7	16.6	9.0	11.1	5.2	12.3	1.5
Wholesale/retail trade	1.7	38.3	17.1	13.9	18.0	11.4	7.7	6.2
Services	0.1	50.5	31.0	22.6	11.6	11.1	3.1	2.4

NOTE: The sample is made up of private, for-profit employers with 20 or more employees. Estimates appearing as 0.0 may be nonzero but less than 0.05.

SOURCE: 1997 National Employer Survey, Phase II. Administered by the U.S. Bureau of the Census; designed and funded by the National Center on the Educational Quality of the Workforce at the University of Pennsylvania.

Figure 6a—Percentage of employers reporting that they participated in selected work-based learning activities: 1997



NOTE: The sample is made up of private, for-profit employers with 20 or more employees.

SOURCE: 1997 National Employer Survey, Phase II. Administered by the U.S. Bureau of the Census; designed and funded by the National Center on the Educational Quality of the Workforce at the University of Pennsylvania.

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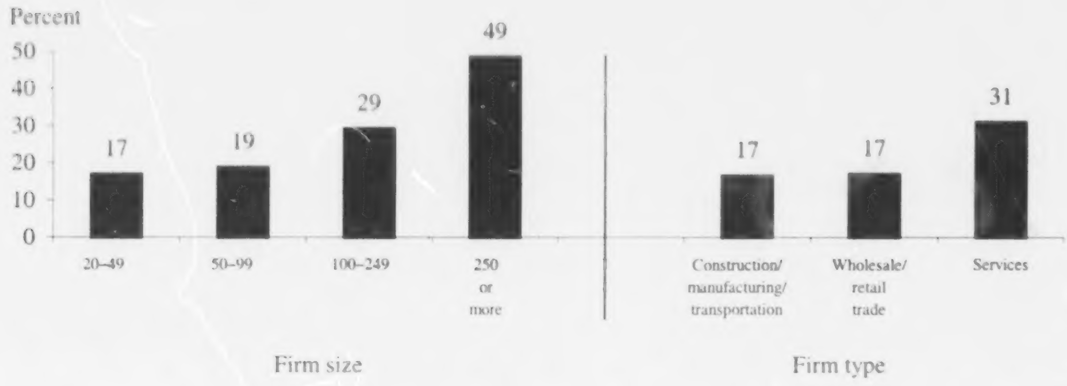
Figure 6b—Percentage of employers reporting that they offered internships, by firm size and firm type: 1997



NOTE: The sample is made up of private, for-profit employers with 20 or more employees.

SOURCE: 1997 National Employer Survey, Phase II. Administered by the U.S. Bureau of the Census; designed and funded by the National Center on the Educational Quality of the Workforce at the University of Pennsylvania.

PERSPECTIVES ON EMPLOYEES

Hiring Practices

Employers do not rate years of completed schooling or high academic performance as important as attitude and communication skills, when hiring front-line workers from among an established applicant pool.[42] However, it may be that years of completed schooling and high academic performance are more important during initial applicant screening.[43] It may also be that employers have historically found that schooling measures are not reliable indicators of what students know and are able to do.[44] High academic performance may also not be as important as satisfactory academic performance.

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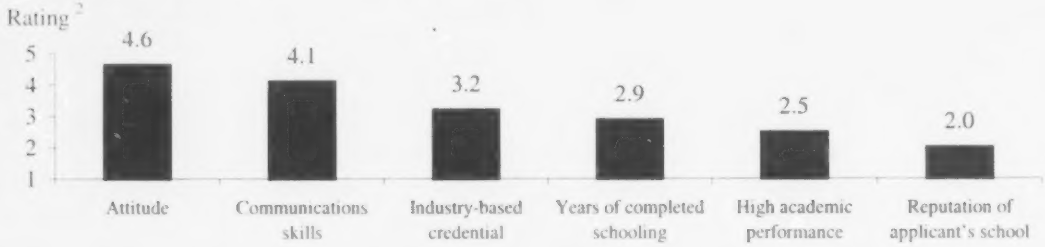
[42] For manufacturing establishments, the term "front-line workers" includes production workers; for other establishments, the term refers to sales and customer service workers.

[43] The surveys also did not ask whether education level or high academic performance were factors in retaining employees.

[44] In recent years, there have been several efforts to reinforce the connection between school performance and workplace success. For example, in 1997 the Business Coalition for Education Reform, which includes the National Alliance of Business and other organizations, began a two-year nationwide effort to encourage the use of school records in the hiring process. See J. Hughes, "Business Group Encourages Employers to Seek Prospective Workers' Academic Transcripts," in *Chronicle of Higher Education* (Washington, D.C.: February 11, 1999).

- In 1997, employers rated attitude and communications skills as the most important factors in hiring front-line workers from an established applicant pool (4.6 and 4.1 on a 5-point scale) (figure 7). In a list of six possible hiring factors, years of completed schooling ranked fourth in importance, and high academic performance fifth (2.9 and 2.5 on a 5-point scale).

Figure 7—Average employer rating of hiring factors for front-line workers[1] in an established applicant pool: 1997



[1] For manufacturing establishments, the term "front-line workers" includes production workers; for other establishments, the term refers to sales and customer service workers.

[2] On a 1–5 scale, a response of 1 indicates the hiring factor is not important and is not considered in hiring; a rating of 5 indicates it is very important to employers in hiring.

NOTE: The sample is made up of private, for-profit employers with 20 or more employees.

SOURCE: 1997 National Employer Survey, Phase II. Administered by the U.S. Bureau of the Census; designed and funded by the National Center on the Educational Quality of the Workforce at the University of Pennsylvania.

Education Levels of Front-Line Workers

Firms in the services industry report higher education levels of front-line workers than firms in the wholesale/retail trade industry and the construction, manufacturing, and transportation industries.[45]

- The education levels of front-line workers employed in service firms were higher than those of their counterparts employed in other types of firms in 1997 (table 11; figure 8). Fifty-six percent of front-line workers in service firms had at least some postsecondary education, compared with 20 percent of front-line workers in construction, manufacturing, and transportation firms and 39 percent of these workers in wholesale and retail trade firms.

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[45] For manufacturing establishments, the term "front-line workers" includes production workers; for other establishments, the term refers to sales and customer service workers.

Table 11—Percentage distribution of employers according to their estimations of the education levels of new front-line workers,[1] by firm type: 1997

Firm type	Some postsecondary education[2]	High school diploma or less
Total	36.8	63.2
Construction, manufacturing, and transportation	20.4	79.6
Wholesale/retail trade	38.7	61.3
Services	56.1	43.9

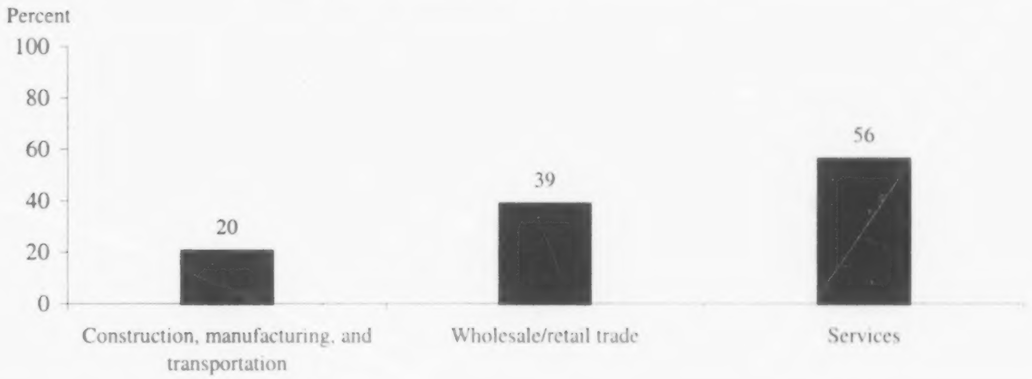
[1] For manufacturing establishments, the term "front-line workers" includes production workers; for other establishments, the term refers to sales and customer service workers.

[2] Certification, some college, 2-year degree, or 4-year degree or higher.

NOTE: The sample is made up of private, for-profit employers with 20 or more employees. Percentages may not add to 100 due to rounding.

SOURCE: 1997 National Employer Survey, Phase II. Administered by the U.S. Bureau of the Census; designed and funded by the National Center on the Educational Quality of the Workforce at the University of Pennsylvania.

Figure 8—Average percentage of front-line workers[1] reported by employers to have at least some postsecondary education,[2] by firm type: 1997



[1] For manufacturing establishments, the term "front-line workers" includes production workers; for other establishments, the term refers to sales and customer service workers.

[2] Certification, some college, 2-year degree, or 4-year degree or higher.

NOTE: The sample is made up of private, for-profit employers with 20 or more employees.

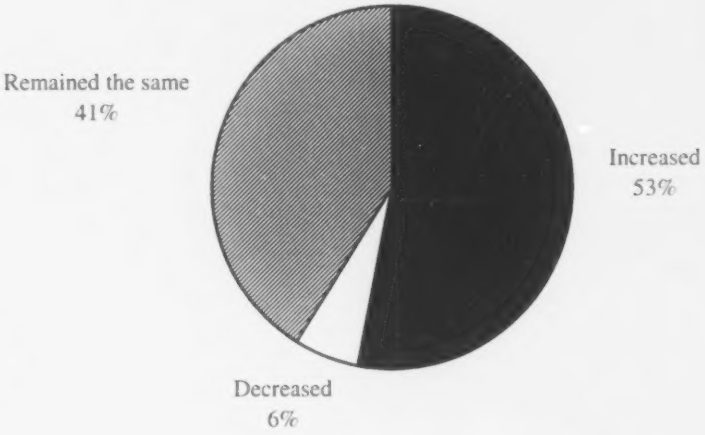
SOURCE: 1997 National Employer Survey, Phase II. Administered by the U.S. Bureau of the Census; designed and funded by the National Center on the Educational Quality of the Workforce at the University of Pennsylvania.

Skill Requirements

Most employers report that front-line skill requirements are increasing.

- In 1997, 53 percent of employers reported that the skills required to do production or support jobs at an acceptable level increased in the previous 3 years, while 41 percent reported that required skills stayed the same and 6 percent reported that they decreased (figure 9).

Figure 9—Percentage distribution of employers reporting that the skills required to do production or support jobs at an acceptable level increased, decreased, or remained the same during the last 3 years: 1997



NOTE: The sample is made up of private, for-profit employers with 20 or more employees.

SOURCE: 1997 National Employer Survey, Phase II. Administered by the U.S. Bureau of the Census; designed and funded by the National Center on the Educational Quality of the Workforce at the University of Pennsylvania.

Worker Proficiency and Training

According to most employers, the proficiency of their front-line workers either stayed the same or increased between 1994 and 1997. Employer-provided training, which also increased over this 3-year period, may have contributed to proficiency gains. Alternatively, education reform efforts over the last decade may have contributed to the improvement in worker proficiency. In either case, it is impossible to establish a causal link from the available data.

- Fifty-five percent of employers surveyed in 1997 reported that the proficiency of front-line workers remained the same over the last 3 years (1994–97) (table 12). About one-third said the proficiency of these workers increased, while 14 percent said it decreased. Firms in the lowest revenue category (less than $1 million per year) were generally less likely to report that the proficiency of their front-line workers increased (figure 10).

Table 12—Percentage distribution of employers reporting that the proficiency of front-line workers* has increased, decreased, or remained the same during the last 3 years, by firm revenues: 1997

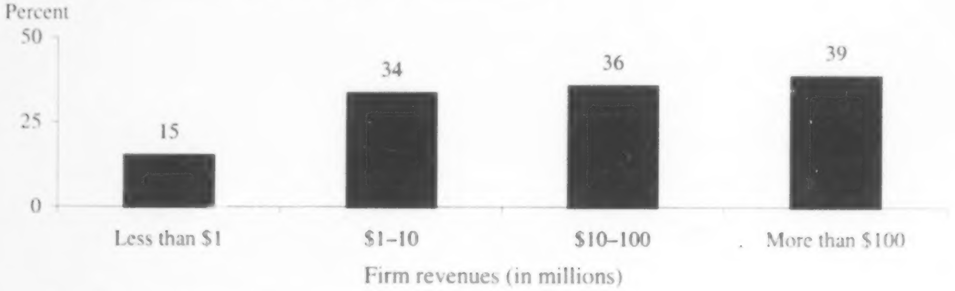
1996 Firm revenues (in millions)	Increased	Decreased	Remained the same
Total	31.9	13.7	54.5
Less than $1	15.2	22.1	62.8
$1–10	33.5	10.1	56.4
$10–100	35.7	14.4	49.8
More than $100	38.6	6.7	54.7

*For manufacturing establishments, the term "front-line workers" includes production workers; for other establishments, the term refers to sales and customer service workers.

NOTE: The sample is made up of private, for-profit employers with 20 or more employees. Percentages may not add to 100 due to rounding.

SOURCE: 1997 National Employer Survey, Phase II. Administered by the U.S. Bureau of the Census; designed and funded by the National Center on the Educational Quality of the Workforce at the University of Pennsylvania.

Figure 10—Percentage of employers reporting that the proficiency of front-line workers* has increased during the last 3 years, by firm revenues: 1997



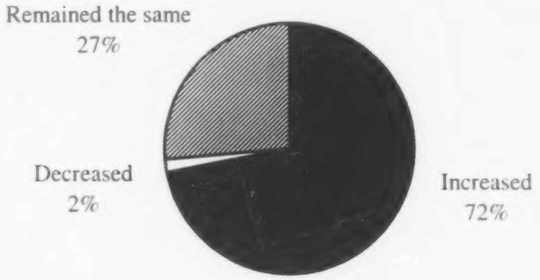
*For manufacturing establishments, the term "front-line workers" includes production workers; for other establishments, the term refers to sales and customer service workers.

NOTE: The sample is made up of private, for-profit employers with 20 or more employees.

SOURCE: 1997 National Employer Survey, Phase II. Administered by the U.S. Bureau of the Census; designed and funded by the National Center on the Educational Quality of the Workforce at the University of Pennsylvania.

- Seventy-two percent of employers in 1997 reported increasing the amount of formal training provided to workers in the previous 3 years (figure 11a). Economic reasons—to remain competitive and improve the quality of output—were more likely to be given as the cause of this increase in training than lack of skills among newly hired workers (figure 11b).

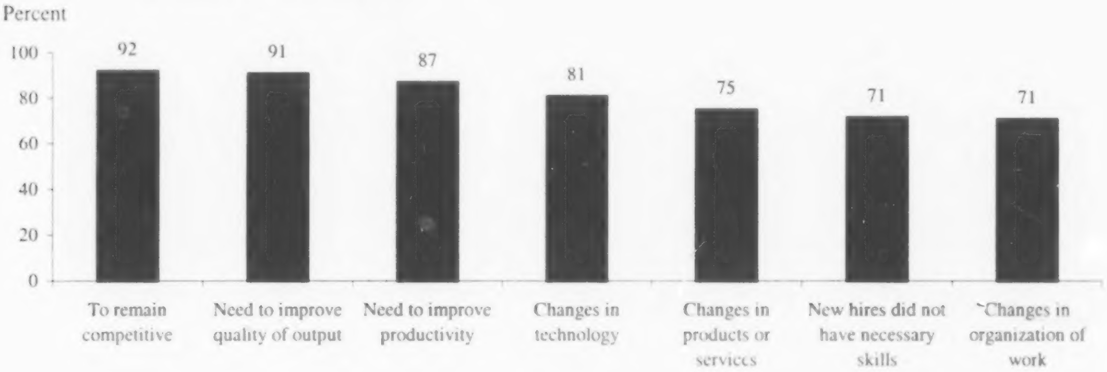
Figure 11a—Percentage distribution of employers reporting that the formal training provided to employees has increased, decreased, or remained the same during the last 3 years: 1994



NOTE: The sample is made up of private, for-profit employers with 20 or more employees. Percentages may not add to 100 due to rounding.

SOURCE: 1994 National Employer Survey, Phase I. Administered by the U.S. Bureau of the Census; designed and funded by the National Center on the Educational Quality of the Workforce at the University of Pennsylvania.

Figure 11b—Percentage of employers reporting an increase in formal training during the last 3 years, by reason for increase: 1994



NOTE: The sample is made up of private, for-profit employers with 20 or more employees.

SOURCE: 1994 National Employer Survey, Phase I. Administered by the U.S. Bureau of the Census; designed and funded by the National Center on the Educational Quality of the Workforce at the University of Pennsylvania.

Comparing Previous Work-Based Learning and On-the-Job Experiences

The majority of employers with new front-line employees who participated in work-based learning report that these employees are superior to comparable new hires in terms of productivity and attitude. Virtually no employers report that new front-line workers with work-based learning experience are inferior in these two respects to comparable new hires.[46]

- In 1997, of those employers who reported hiring front-line workers with prior work-based learning experience (cooperative education, internships, or apprenticeships), most were more satisfied with these new hires than with other newly hired front-line workers aged 18–25 (table 13; figures 12a and 12b). Sixty-two percent reported that the new hires with work-based learning experience were more productive than workers aged 18–25 without such experience. Sixty-five percent reported that the attitude of these employees was better than that of their counterparts. At least one-third of employers reported that the productivity or attitude of front-line workers with work-based learning experience was about the same as that of other young new hires. No more than 1 percent of employers reported that the productivity or attitude of front-line workers with work-based learning experience was worse than that of other young new hires.

Table 13—Among firms with employees with work-based learning (WBL) experience, percentage distribution of employers according to their evaluations of new front-line workers[1] with WBL experience[2] versus their non-WBL counterparts aged 18–25, by selected employee characteristics: 1997

Selected employee characteristics	Rated WBL employees the same	Rated WBL employees better	Rated WBL employees worse
Productivity	37.6	61.9	0.5
Attitude	34.0	65.1	0.9

[1] For manufacturing establishments, the term "front-line workers" includes production workers; for other establishments, the term refers to sales and customer service workers.

[2] The work-based learning experiences of these new front-line workers may have taken place at the current employer's firm or at another firm.

NOTE: The sample is made up of private, for-profit employers with 20 or more employees. Percentages may not add to 100 due to rounding.

SOURCE: 1997 National Employer Survey, Phase II. Administered by the U.S. Bureau of the Census; designed and funded by the National Center on the Educational Quality of the Workforce at the University of Pennsylvania.

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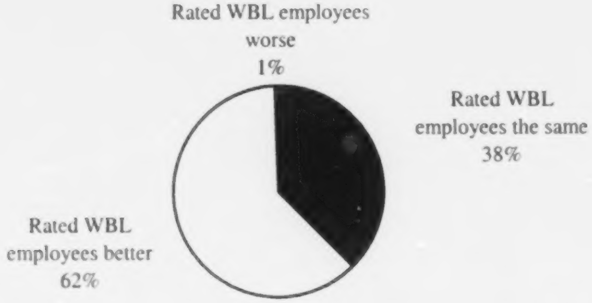
[46] The work-based learning experiences of these new front-line workers may have taken place at the current employer's firm or at another firm. The survey did not specify the location of the work-based learning in question.

Figure 12a—Percentage distribution of firms with work-based learning (WBL) employees according to their evaluations of the productivity of new front-line workers[1] with WBL experience[2] versus their non-WBL counterparts aged 18–25: 1997



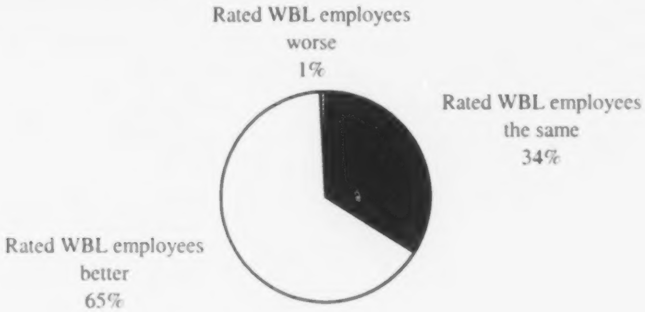
[1] For manufacturing establishments, the term "front-line workers" includes production workers; for other establishments, the term refers to sales and customer service workers.

[2] The work-based learning experiences of these new front-line workers may have taken place at the current employer's firm or at another firm.

NOTE: The sample is made up of private, for-profit employers with 20 or more employees. Percentages may not add to 100 due to rounding.

SOURCE: 1997 National Employer Survey, Phase II. Administered by the U.S. Bureau of the Census; designed and funded by the National Center on the Educational Quality of the Workforce at the University of Pennsylvania.

Figure 12b—Percentage distribution of firms with work-based learning (WBL) employees according to their evaluations of the attitude of new front-line workers[1] with WBL experience[2] versus their non-WBL counterparts aged 18–25: 1997



[1] For manufacturing establishments, the term "front-line workers" includes production workers; for other establishments, the term refers to sales and customer service workers.

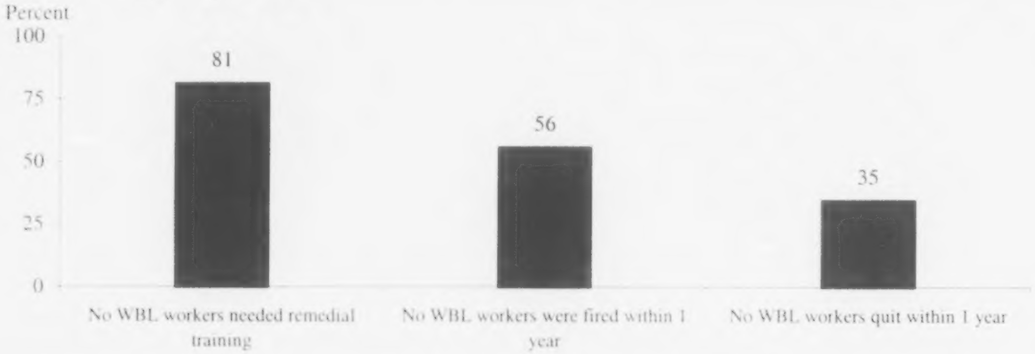
[2] The work-based learning experiences of these new front-line workers may have taken place at the current employer's firm or at another firm.

NOTE: The sample is made up of private, for-profit employers with 20 or more employees.

SOURCE: 1997 National Employer Survey, Phase II. Administered by the U.S. Bureau of the Census; designed and funded by the National Center on the Educational Quality of the Workforce at the University of Pennsylvania.

- Eighty-one percent of firms in 1997 who reported hiring front-line workers with prior work-based learning experience reported that none of these new hires needed remedial training in reading or mathematics (figure 13). Fifty-six percent of these firms also reported that none of their front-line workers with work-based learning experience were fired within 1 year of being hired, and 35 percent reported that none of these employees quit within a year of being hired. However, the survey did not ask for comparable information about front-line workers who did not have prior work-based learning experience.

Figure 13—Percentage of firms with work-based learning (WBL) employees reporting that none of their new front-line workers* with WBL experience needed remedial training or were fired or quit within 1 year: 1997



*For manufacturing establishments, the term "front-line workers" includes production workers; for other establishments, the term refers to sales and customer service workers.

NOTE: The sample is made up of private, for-profit employers with 20 or more employees.

SOURCE: 1997 National Employer Survey, Phase II. Administered by the U.S. Bureau of the Census; designed and funded by the National Center on the Educational Quality of the Workforce at the University of Pennsylvania.

IV. Trends in Secondary Vocational Education

OVERVIEW

This chapter provides information on trends in secondary vocational education during the period 1982–1994. Because little vocational education has historically been provided by private schools, the analysis focuses on public high schools (grades 9 through 12). The chapter also provides data on school reform efforts as of 1997 and teacher trends from 1991 to 1994. Specifically, this chapter provides information on these key topics:

- participation in vocational education
- characteristics of students participating in vocational education
- academic coursetaking and achievement
- school reform efforts
- work experience and work-based learning
- technology literacy
- vocational teachers

When making comparisons among different groups of high school graduates, three curriculum-based definitions were used:

Vocational concentrators completed 3.0 or more credits in a single occupational program area.[47] These program areas include the following:

- agriculture and renewable resources
- business
- marketing and distribution

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[47] A second definition was also sometimes used: *vocational specialists* completed 4.0 or more credits in a single occupational program area, with 2.0 or more of these units taken beyond the introductory level. However, the report generally focuses on the first, less restrictive definition of vocational concentrators.

- health care
- public and protective services
- trade and industry
- technology and communications
- child care and education
- food service and hospitality
- personal and other services

College preparatory students completed a college preparatory course of study that was consistent with the prevailing entrance requirements at public 4-year institutions.[48] These included 4.0 credits in English; 3.0 credits in mathematics at the Algebra 1 level or higher; 2.0 credits in biology, chemistry, and/or physics; 2.0 credits in social studies with at least 1.0 credit in U.S. or World History; and 2.0 credits in a single foreign language.

Other/general students met neither of the above criteria.

Students who met both the vocational concentrator and college preparatory criteria were included in the vocational concentrators total in the tables and figures. Students who met only the vocational concentrator criteria, as well as the "both" group, were also reported separately. In most instances, the chapter focuses on the vocational concentrators total, and refers to this group simply as "vocational concentrators." When the chapter describes students who met only the vocational concentrator criteria or those who met both the vocational concentrator and college preparatory criteria, the text makes it clear that these subgroups are being discussed.

As previewed in the Introduction, the data sets used in this chapter include the following:

- *High School and Beyond (HS&B).* Sophomore Cohort Surveys and High School Transcript Study (describing 1982 high school graduates)
- *High School Transcript Studies (HSTS)* of 1990 and 1994 (describing 1990 and 1994 high school graduates)
- *National Education Longitudinal Study of 1988 (NELS:88)* Surveys, Assessment File, and High School Transcript Study (describing 1992 high school graduates)

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[48] P. Flanagan, *Raising Standards: State Policies to Improve Academic Preparation for College* (Rockville, MD: Westat, 1992).

- *National Longitudinal Study of Youth (NLSY)* of 1997 (describing schools with a 12th grade)

- *Schools and Staffing Surveys (SASS)* of 1991 and 1994 (describing teachers)

The first three data sets, HS&B, HSTS:90, and HSTS:94, form the foundation of the trend analysis in this chapter. They contain transcript data, which provide a rich source of information on course-taking patterns, as well as other survey information. NELS:88 was used primarily to examine the relationship between vocational coursetaking and achievement test gains between the 8th and 12th grades. NLSY provided information on the extent to which certain school reforms have been implemented in public schools with a 12th grade.[49] SASS was used to provide trend data (1991–94) on the qualifications, experience, and demographic characteristics of vocational teachers, as well as to allow comparisons with other teachers. SASS:94 included questions that provide baseline data on teachers' professional development activities.

PARTICIPATION IN VOCATIONAL EDUCATION

From 1982 to 1994, there was a general decline in the participation of high school students in vocational education. The percentage of public high school graduates taking at least one vocational education course decreased slightly. However, the decline in the percentage of graduates completing a sequence of related occupational courses was more dramatic. These decreases may be partly due to increases in high school graduation requirements implemented by many states after the publication of *A Nation at Risk*[50] in 1983. As students have been required to take more academic coursework, they may have elected to take fewer vocational courses. See figure 1 in the Introduction for a summary of the high school curriculum categories referred to in this section (that is, the academic, vocational (and its subcategories), and enrichment/other curricula).

- The total amount of coursework completed by public high school graduates increased, on average, from 21.6 credits in 1982 to 24.2 credits in 1994, an increase of 12 percent (table 14; figure 14). This change was driven by a 23 percent increase in completed academic credits. The average number of credits public high school graduates earned in the enrichment/other curriculum remained steady over this time period at about 2.6, while the average number of vocational credits earned fell from 4.7 to 4.0. In 1994, credits earned in the vocational education curriculum fell to 16 percent of total high school credits, while the share in 1982 was about 22 percent.

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[49] Unfortunately, due to an error during the sample design stage, schools classified by their districts as primarily "vocational" were excluded from the NLSY sample. Consequently, the survey generally describes comprehensive high schools and, therefore, may provide a conservative estimate of local reform efforts.

[50] National Commission on Excellence in Education, *A Nation at Risk* (1983).

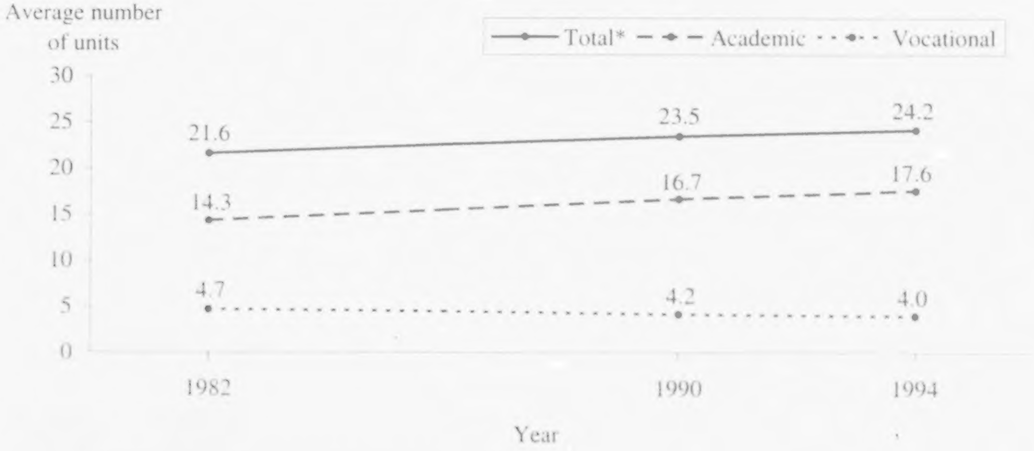
Table 14—Average number of Carnegie units accumulated by public high school graduates, by type of coursework: 1982, 1990, and 1994

Type of coursework	1982	1990	1994
Total	21.60	23.53	24.17
Academic	14.28	16.66	17.58
Vocational total	4.68	4.19	3.96
Specific labor market preparation	3.03	2.89	2.79
General labor market preparation	0.95	0.73	0.64
Consumer and homemaking education	0.69	0.57	0.52
Enrichment/other	2.64	2.68	2.63

NOTE: Averages may not add to totals due to rounding.

SOURCE: U.S. Department of Education, National Center for Education Statistics, High School and Beyond Sophomore Cohort 1982 High School Transcript Study and 1990 and 1994 National Assessment of Educational Progress High School Transcript Studies.

Figure 14—Average number of Carnegie units accumulated by public high school graduates in academic and vocational curricula: 1982, 1990, and 1994



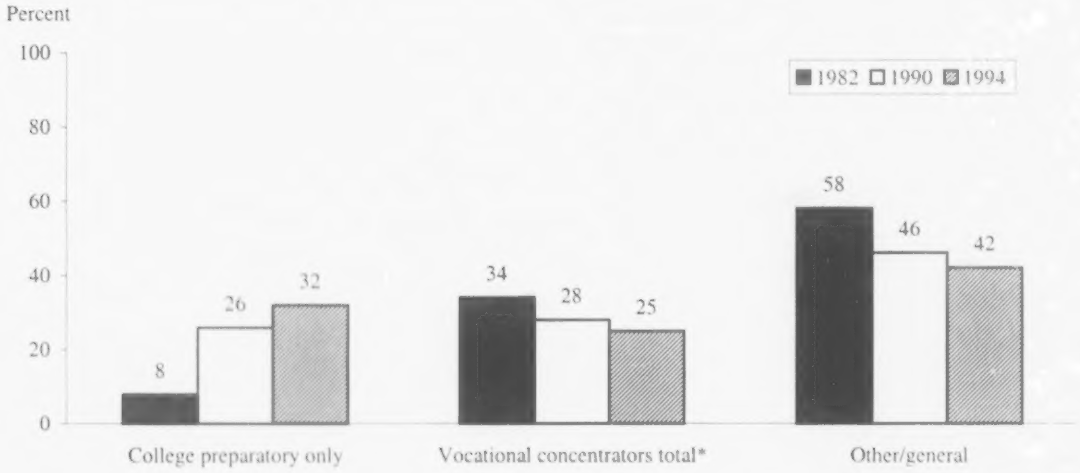
*Includes Carnegie units earned in enrichment/other courses.

SOURCE: U.S. Department of Education, National Center for Education Statistics, High School and Beyond Sophomore Cohort 1982 High School Transcript Study and 1990 and 1994 National Assessment of Educational Progress High School Transcript Studies.

- The percentage of public high school graduates taking at least one vocational education course decreased slightly from 98.2 percent in 1982 to 97.2 percent in 1994 (table 1 in the Introduction). Although the percentage of graduates taking at least one specific labor market preparation course increased slightly from 88.7 percent in 1982 to 90.8 percent in 1994, the average amount of coursework completed in the specific labor market preparation curriculum declined from 3.0 credits to 2.8 credits over the same time period (tables 1 and 14).

- The percentage of graduates concentrating in the vocational curriculum (taking three or more courses in a single occupational program area) decreased from 34 percent in 1982 to 25 percent in 1994, a decline of about 25 percent (figure 15; table 15). The percentage of graduates specializing in the vocational curriculum (taking four or more courses in a single occupational program area with at least two of those courses beyond the introductory level) declined more dramatically, from 13 percent in 1982 to 7 percent in 1994, a decline of about 44 percent.

Figure 15—Percentage distribution of public high school graduates according to their curriculum specialization in high school: 1982, 1990, and 1994



*Includes students who completed both a vocational concentration and a college preparatory curriculum.

NOTE: Percentages may not add to 100 due to rounding.

SOURCE: U.S. Department of Education, National Center for Education Statistics, High School and Beyond Sophomore Cohort 1982 High School Transcript Study and 1990 and 1994 National Assessment of Educational Progress High School Transcript Studies.

Table 15—Percentage of public high school graduates concentrating (accumulating 3 or more credits) and specializing (accumulating 4 or more credits with 2 or more of those credits beyond the introductory level) in vocational programs: 1982, 1990, and 1994

Vocational completers	1982	1990	1994
Concentrators	33.7	27.8	25.4
Specialists	12.6	7.7	7.0

SOURCE: U.S. Department of Education, National Center for Education Statistics, High School and Beyond Sophomore Cohort 1982 High School Transcript Study and 1990 and 1994 National Assessment of Educational Progress High School Transcript Studies.

- Trade and industry and business were the most popular occupational programs in 1994—about 8 percent of graduates concentrated in each of these areas (table 16). These were also the most popular programs in earlier years; however, the percentage of graduates concentrating in trade and industry, as well as the percentage concentrating in business, declined over the period studied. In 1982, about 15 percent of graduates had concentrated in trade and industry and 12 percent in business.

- Fewer students concentrated in health care and in technology and communications than in business and in trade and industry in all the surveyed years from 1982 to 1994 (table 16). However, contrary to business and trade and industry trends, the proportions of students who concentrated in health care and in technology and communications increased between 1982 and 1994.[51]

CHARACTERISTICS OF STUDENTS PARTICIPATING IN VOCATIONAL EDUCATION

Although participation in the specific occupational curriculum declined for most groups of students between 1982 and 1994, there were a few exceptions to this trend. The percentage of black and Asian/Pacific Islander students concentrating in vocational education stayed about the same over this period, and the concentration rate of students with disabilities increased.[52] In addition, the average number of specific occupational credits earned by blacks stayed about the same and increased for Asians/Pacific Islanders and students with disabilities. The increase in participation of students with disabilities is consistent with the emphasis of the 1990 Perkins Act on serving students with special needs.

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[51] For the health program area, the increase occurred primarily between 1990 and 1994.

[52] For simplicity's sake, this report refers to "black, non-Hispanic" students as "black" and "white, non-Hispanic" studens as "white." However, it should be remembered that all Hispanic students, regardless of race, are included in the Hispanic group.

Table 16—Percentage of public high school graduates concentrating (accumulating 3 or more credits) in various vocational programs: 1982, 1990, and 1994

Year	Agriculture and renewable resources	Business	Marketing and distribution	Health care	Public and protective services	Trade and industry	Technology and communications	Occupational home economics			
								Total	Personal and other services	Food service and hospitality	Child care and education
1982	2.8	11.6	1.8	0.6	0.0	14.8	0.5	1.7	1.3	0.2	0.2
1990	2.5	8.4	2.1	0.6	0.0	11.2	0.8	2.0	1.3	0.5	0.3
1994	3.2	7.7	2.2	1.0	0.0	8.5	0.9	2.0	1.1	0.4	0.6

NOTE: Estimates appearing as 0.0 may be nonzero but less than 0.05.

SOURCE: U.S. Department of Education, National Center for Education Statistics, High School and Beyond Sophomore Cohort 1982 High School Transcript Study and 1990 and 1994 National Assessment of Educational Progress High School Transcript Studies.

In all the surveyed years from 1982 to 1994, male students, students in rural schools, and students with lower grade-point averages (GPAs) completed more specific occupational coursework and were more likely to be vocational concentrators than female students, students in urban and suburban schools, and students with higher GPAs.

Participation in Vocational Education Overall

Although the decline in vocational coursetaking between 1982 and 1994 was apparent for most groups, the decline was steeper for females than males and for Hispanics than other racial–ethnic groups. In contrast, students with disabilities increased their vocational coursetaking over this period.

- In 1994, both male and female public high school graduates earned approximately 24 credits in total coursework (table 17). Females averaged about 18 credits in academic classes, whereas males averaged 17. Both females and males increased their academic coursework from 1982 to 1994. However, the rate of increase was faster for female high school graduates than for their male counterparts, resulting in a greater gender difference in academic course completion in 1994 than in 1982. The number of vocational credits completed by both male and female public high school graduates decreased between 1982 and 1994. Although males and females completed about the same amount of vocational coursework in 1982, the number of vocational credits earned by females decreased at a faster rate than that of male graduates from 1982 to 1994. Consequently, males earned more vocational credits than females in 1994, completing 4.1 credits versus 3.8 for females.

- In all the surveyed years from 1982 to 1994, Asian/Pacific Islander students completed fewer courses in the vocational curriculum than did students of other race–ethnicities (table 18). Asians/Pacific Islanders earned about 3.0 vocational credits in 1994, while other students completed between 3.9 and 4.3 credits, on average. Hispanic students completed more vocational credits than white students in 1982; however, the two groups completed similar amounts in 1990 and 1994.[53] All students, despite their race–ethnicity, decreased the amount of vocational coursework they completed between 1982 and 1994. During this period, Hispanics had the sharpest decline in the amount of vocational coursework completed.

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[53] The data show no other significant differences among racial–ethnic groups pertaining to the completion of vocational credits in 1982, 1990, and 1994.

Table 17—Average number of Carnegie units accumulated by public high school graduates, by type of coursework and sex: 1982, 1990, and 1994

Type of coursework and sex	1982	1990	1994
Total	21.60	23.53	24.17
Male	21.43	23.35	23.99
Female	21.76	23.69	24.34
Academic	14.28	16.66	17.58
Male	14.00	16.17	17.03
Female	14.55	17.10	18.11
Vocational total	4.68	4.19	3.96
Male	4.68	4.32	4.13
Female	4.68	4.08	3.80
Specific labor market preparation	3.03	2.89	2.79
Male	3.43	3.28	3.08
Female	2.66	2.53	2.52
General labor market preparation	0.95	0.73	0.64
Male	0.94	0.70	0.70
Female	0.97	0.76	0.58
Consumer and homemaking education	0.69	0.57	0.52
Male	0.31	0.33	0.35
Female	1.05	0.79	0.70
Enrichment/other	2.64	2.68	2.63
Male	2.75	2.87	2.83
Female	2.53	2.51	2.44

NOTE: Averages may not add to totals due to rounding.

SOURCE: U.S. Department of Education, National Center for Education Statistics, High School and Beyond Sophomore Cohort 1982 High School Transcript Study and 1990 and 1994 National Assessment of Educational Progress High School Transcript Studies.

Table 18—Average number of Carnegie units accumulated by public high school graduates in the vocational and specific labor market preparation curricula, by race–ethnicity: 1982, 1990, and 1994

	Vocational total			Specific labor market preparation		
Race–ethnicity	1982	1990	1994	1982	1990	1994
Total	4.68	4.19	3.96	3.03	2.89	2.79
American Indian/Alaskan Native	4.93	4.62	4.26	3.40	3.16	2.84
Asian/Pacific Islander	3.31	3.07	3.01	2.01	2.07	2.13
Black, non-Hispanic	4.81	4.41	4.29	2.90	2.79	2.94
Hispanic	5.26	4.12	3.87	3.30	2.85	2.75
White, non-Hispanic	4.59	4.22	3.96	3.02	2.97	2.81

SOURCE: U.S. Department of Education, National Center for Education Statistics, High School and Beyond Sophomore Cohort 1982 High School Transcript Study and 1990 and 1994 National Assessment of Educational Progress High School Transcript Studies.

- Students with and without disabilities increased at similar rates the amount of total high school coursework they completed between 1982 and 1994 (table 19). However, trends differed by type of coursework.[54] Students without disabilities completed 23 percent more academic credits in 1994 than they had completed in 1982, while students with disabilities maintained a steady academic course load of about 14 credits. In contrast, students without disabilities decreased their vocational coursetaking by 17 percent between 1982 and 1994, and students with disabilities increased their vocational coursework by about 24 percent over the same period. Therefore, although students with and without disabilities completed similar amounts of vocational coursework in 1982,

Table 19—Average number of Carnegie units accumulated by public high school graduates, by type of coursework and disability status: 1982, 1990, and 1994

Type of coursework and disability status	1982	1990	1994
Total	21.60	23.53	24.17
Has disability	21.32	22.81	24.00
No disability	21.63	23.54	24.18
Academic	14.28	16.66	17.58
Has disability	13.82	13.30	14.43
No disability	14.34	16.74	17.70
Vocational total	4.68	4.19	3.96
Has disability	4.82	6.01	5.99
No disability	4.66	4.14	3.88
Specific labor market preparation	3.03	2.89	2.79
Has disability	3.00	3.88	3.74
No disability	3.03	2.86	2.76
General labor market preparation	0.95	0.73	0.64
Has disability	1.05	1.28	1.45
No disability	0.95	0.72	0.61
Consumer and homemaking education	0.69	0.57	0.52
Has disability	0.77	0.86	0.79
No disability	0.69	0.56	0.51
Enrichment/other	2.64	2.68	2.63
Has disability	2.68	3.50	3.58
No disability	2.63	2.66	2.60

NOTE: Averages may not add to totals due to rounding.

SOURCE: U.S. Department of Education, National Center for Education Statistics, High School and Beyond Sophomore Cohort 1982 High School Transcript Study and 1990 and 1994 National Assessment of Educational Progress High School Transcript Studies.

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[54] Total coursework includes academic, vocational, and enrichment/other coursework.

students with disabilities completed significantly more vocational credits than students without disabilities in 1990 and 1994. In fact, students with disabilities completed 54 percent more vocational credits in 1994 than students without disabilities. Students with disabilities also completed increasing numbers of enrichment/other credits throughout this period. In 1994, students with disabilities averaged 3.6 enrichment/other credits upon graduation, and students without disabilities earned 2.6 credits.

- In all the years surveyed, there was a positive relationship between graduates' GPAs and the total amount of coursework they completed (table 20). That is, graduates with higher GPAs completed more total coursework. Similarly, there was a positive association between GPA and academic coursetaking. Conversely, during this period, students with lower GPAs generally completed more vocational credits.

- In all the years surveyed, students graduating from rural high schools completed more vocational coursework than graduates of urban and suburban public high schools (table 21). These differences in vocational coursetaking remained relatively constant between 1982 and 1994.

Participation in Specific Occupational Programs

While specific occupational coursetaking declined for most groups between 1982 and 1994, it stayed about the same for blacks and for rural high school graduates. In addition, the number of specific occupational credits earned by Asians/Pacific Islanders and students with disabilities increased over the period studied.

- In 1994, male public high school graduates earned 22 percent more specific occupational credits than their female peers (table 17). This gender gap remained relatively constant between 1982 and 1994.

- Asian/Pacific Islander graduates increased their specific occupational coursetaking between 1982 and 1994 (table 18). Despite this increase, Asian/Pacific Islander graduates completed fewer specific occupational credits than students of other race–ethnicities in all the years studied. American Indian/Alaskan Native, Hispanic, and white graduates all completed fewer specific occupational credits in 1994 than they had in 1982, with the number of specific occupational credits earned by Hispanics decreasing at a faster rate than that of whites. Black students earned about the same number of specific occupational credits in all 3 years.

Table 20—Average number of Carnegie units accumulated by public high school graduates, by grade point average (GPA) and type of coursework: 1982, 1990, and 1994

GPA and type of coursework	1982	1990	1994
Total	21.60	23.53	24.17
GPA			
3.3 or more	22.93	24.66	25.35
2.6–3.29	22.05	23.99	24.62
1.6–2.59	21.08	22.99	23.39
Less than 1.6	19.60	21.35	21.58
Academic			
GPA			
3.3 or more	16.90	19.25	20.09
2.6–3.29	14.88	17.48	18.13
1.6–2.59	13.21	15.39	16.08
Less than 1.6	12.30	13.85	14.22
Vocational total			
GPA			
3.3 or more	3.44	2.79	2.77
2.6–3.29	4.46	3.82	3.84
1.6–2.59	5.25	4.89	4.62
Less than 1.6	4.88	4.97	4.78
Specific labor market preparation			
GPA			
3.3 or more	2.11	1.90	1.95
2.6–3.29	2.89	2.61	2.70
1.6–2.59	3.44	3.40	3.28
Less than 1.6	3.15	3.40	3.33
General labor market preparation			
GPA			
3.3 or more	0.80	0.57	0.49
2.6–3.29	0.90	0.71	0.64
1.6–2.59	1.05	0.81	0.71
Less than 1.6	0.93	0.73	0.76
Consumer and homemaking education			
GPA			
3.3 or more	0.53	0.32	0.33
2.6–3.29	0.66	0.51	0.51
1.6–2.59	0.76	0.68	0.62
Less than 1.6	0.80	0.85	0.69
Enrichment/other			
GPA			
3.3 or more	2.58	2.62	2.50
2.6–3.29	2.72	2.69	2.65
1.6–2.59	2.63	2.71	2.69
Less than 1.6	2.42	2.53	2.58

NOTE: Averages may not add to totals due to rounding.

SOURCE: U.S. Department of Education, National Center for Education Statistics, High School and Beyond Sophomore Cohort 1982 High School Transcript Study and 1990 and 1994 National Assessment of Educational Progress High School Transcript Studies.

Table 21—Average number of Carnegie units accumulated by public high school graduates in the vocational and specific labor market preparation curricula, by school urbanicity: 1982, 1990, and 1994

	Vocational total			Specific labor market preparation		
School urbanicity	1982	1990	1994	1982	1990	1994
Total	4.68	4.19	3.96	3.03	2.89	2.79
Rural	5.23	4.66	4.68	3.32	3.22	3.25
Urban	4.28	3.66	3.34	2.83	2.52	2.39
Suburban	4.46	3.98	3.47	2.91	2.69	2.52

SOURCE: U.S. Department of Education, National Center for Education Statistics, High School and Beyond Sophomore Cohort 1982 High School Transcript Study and 1990 and 1994 National Assessment of Educational Progress High School Transcript Studies.

- Graduates with disabilities increased the number of specific occupational credits they earned by 25 percent between 1982 and 1994 (table 19). Over the same period, graduates without disabilities completed 9 percent fewer of these credits. These contrasting trends led to a gap in specific occupational credits earned in 1994, with students who had disabilities earning 36 percent more credits than students without disabilities.

- In all the years surveyed from 1982 to 1994, graduates who earned higher GPAs completed fewer specific occupational credits than graduates with lower GPAs (table 20).

- Students graduating from rural public high schools in 1982, 1990, and 1994 completed more specific occupational courses than students graduating from either urban or suburban schools (table 21). The amount of specific occupational coursework students graduating from urban and suburban schools completed decreased between 1982 and 1994, with a steeper decline for urban graduates than for suburban ones. Students graduating from rural schools, however, did not significantly change their specific occupational course-taking patterns over the years studied.

Concentration in Vocational Education

While rates of concentration in vocational education declined for most groups between 1982 and 1994, they stayed about the same for blacks and Asians/Pacific Islanders and increased for students with disabilities.

- The percentage of graduates concentrating in the vocational curriculum (taking three or more courses in a single occupational program area) decreased over time for both male and female students (table 22). Rates of vocational concentration decreased uniformly

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across rural, suburban, and urban schools. The percentage of graduates specializing in the vocational curriculum (completing four or more courses in a single occupational program area, with at least two of those courses beyond the introductory level) decreased for all categories of gender, GPA, and school urbanicity.

- In 1994, 29 percent of male public high school graduates were vocational concentrators, compared with 22 percent of female graduates (table 22). About 9 percent of males were vocational specialists, compared with about 6 percent of females. These 1994 gender disparities in vocational concentration and specialization are similar to the gender gaps in 1982 and 1990.

Table 22—Percentage of public high school graduates concentrating (accumulating 3 or more credits) and specializing (accumulating 4 or more credits with 2 or more of those credits beyond the introductory level) in vocational programs, by selected student and school characteristics: 1982, 1990, and 1994

Selected student and school characteristics	Vocational concentrators			Vocational specialists		
	1982	1990	1994	1982	1990	1994
Total	33.7	27.8	25.4	12.6	7.7	7.0
Sex						
Male	39.0	32.3	28.8	14.9	9.2	8.5
Female	28.7	23.6	22.2	10.5	6.4	5.6
Race–ethnicity						
American Indian/Alaskan Native	46.6	38.0	20.9	6.2	12.4	2.5
Asian/Pacific Islander	17.3	16.6	14.2	5.0	1.4	3.8
Black, non-Hispanic	32.7	27.3	29.0	11.7	7.8	8.2
Hispanic	37.7	27.9	24.9	13.2	7.2	6.5
White, non-Hispanic	33.2	28.5	25.3	12.9	8.1	7.1
Disability status						
Has disability	31.5	42.2	41.3	12.9	10.4	12.4
No disability	33.8	27.4	24.8	12.6	7.6	6.8
Grade point average						
3.3 or more	19.8	13.6	14.6	7.4	3.0	2.8
2.6–3.29	30.9	23.8	23.9	12.3	6.4	6.6
1.6–2.59	40.3	35.1	31.8	14.5	10.2	9.5
Less than 1.6	36.1	34.7	31.8	13.9	9.6	7.8
School urbanicity						
Rural	38.3	32.1	31.9	13.7	8.5	9.1
Suburban	31.8	26.5	22.3	12.7	10.4	6.5
Urban	30.7	22.6	19.3	10.6	5.9	4.9

SOURCE: U.S. Department of Education, National Center for Education Statistics, High School and Beyond Sophomore Cohort 1982 High School Transcript Study and 1990 and 1994 National Assessment of Educational Progress High School Transcript Studies.

- Hispanics, American Indians/Alaskan Natives, and whites all decreased their rates of vocational concentration in public high school during the time period studied (table 22). Black graduates, as well as Asian/Pacific Islander graduates, did not significantly change their concentration rates over the years. In 1994, 29 percent of black students concentrated in vocational education, compared with about 25 percent of white and Hispanic students, 21 percent of American Indian/Alaskan Native students, and 14 percent of Asian/Pacific Islander students.

- Rates of specializing in vocational education (taking four or more courses in a single occupational program area, with at least two of those courses beyond the introductory level) declined among black, Hispanic, and white graduates between 1982 and 1994 (table 22). On the other hand, there was no consistent trend in the specialization rate for American Indians/Alaskan Natives during the 3 years studied, although their rate of specialization in vocational education declined significantly between 1990 and 1994. The specialization rate for Asians/Pacific Islanders did not change significantly over the 1982–1994 period. In 1994, American Indian/Alaskan Native and Asian/Pacific Islander graduates were generally less likely than graduates from all other racial–ethnic groups to specialize in vocational education.[55]

- Students with disabilities increased their rates of concentration in the vocational curriculum from 32 to 41 percent during the years studied (table 22). Conversely, rates of vocational concentration declined steadily among students without disabilities, from 34 percent in 1982 to 25 percent in 1994. The rate at which students without disabilities specialized in the vocational curriculum also decreased by almost one-half, from 13 percent in 1982 to 7 percent in 1994. Rates of vocational specialization among students with disabilities remained relatively similar over the years studied.

- Public high school graduates with GPAs of 1.6 or higher had decreasing rates of concentration in the vocational curriculum between 1982 and 1994 (table 22). Students with GPAs of less than 1.6 were about equally likely to concentrate in vocational education during all of the years studied, with approximately one-third concentrating in vocational education in each year. In 1994, 15 percent of students with GPAs of 3.3 or higher concentrated in vocational education, and 3 percent of such students were vocational specialists. These rates of concentration and specialization were significantly lower than the rates for students earning lower GPAs. For example, in 1994, 32 percent of students with

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[55] The difference in specialization rates for Asians/Pacific Islanders and Hispanics was not statistically significant.

GPAs between 1.6 and 2.59 concentrated in vocational education, and 10 percent of such students were vocational specialists.

- In all 3 years studied, students graduating from rural public high schools were more likely to concentrate in vocational education than students graduating from suburban and urban schools (table 22).[56] In 1994, about 32 percent of rural graduates in comparison with 22 percent of suburban and 19 percent of urban graduates concentrated in vocational education.

ACADEMIC COURSETAKING AND ACHIEVEMENT

Academic Course-Taking Trends

The academic preparation of students participating in vocational education increased between 1982 and 1994, in both absolute and relative terms. While public high school graduates in general increased their coursetaking in the core academic subjects (English, mathematics, science, and social studies), the rate of increase over the period studied was greater for vocational concentrators than for either college preparatory or other/general students. However, in 1994, vocational concentrators still completed fewer total credits in each of the core academic subjects than did either college preparatory or other/general students. Vocational concentrators also generally increased the rigor of their academic coursework, particularly in mathematics, science, and social studies.

- The percentage of public high school graduates meeting the "New Basics"[57] core academic standards increased from 13 percent in 1982 to 38 percent in 1990, and then to 50 percent in 1994 (table 23).[58]

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[56] In 1990, however, the difference in concentration rates between students in rural and suburban schools was not statistically significant.

[57] In the 1983 publication *A Nation at Risk*, the National Commission on Excellence in Education recommended that high school graduation requirements be strengthened, and that, at a minimum, all students take 4 years of English; 3 years each of mathematics, science, and social studies; and one-half year of computer science. The "core academic standards" referred to in this report include the recommendations for English, mathematics, science, and social studies.

[58] Research on the integration of academic and vocational education indicates that academic knowledge and skills can also be learned via vocational programs—particularly through authentic, real-world applications—as well as via academic coursework. See C. Stasz, T. Kaganoff, and R.A. Eden, *Integrating Academic and Vocational Education: A Review of the Literature, 1987–1992* (MDS-1034) (Berkeley: National Center for Research in Vocational Education, March 1995).

Table 23—Percentage of public high school graduates meeting the New Basics core academic standards,[1] by curriculum specialization in high school: 1982, 1990, and 1994

Curriculum specialization and New Basics core academic standards	1982	1990	1994
All graduates			
New Basics core academics total	13.0	38.1	50.2
English - 4 years	62.7	83.6	88.6
Mathematics - 3 years	46.1	72.2	81.0
Science - 3 years	29.3	52.0	63.9
Social studies - 3 years	67.8	85.8	89.4
Vocational concentrators total[2]			
New Basics core academics total	5.0	18.5	33.2
English - 4 years	57.7	78.7	88.7
Mathematics - 3 years	29.3	57.1	70.7
Science - 3 years	13.2	29.5	45.1
Social studies - 3 years	62.1	77.4	84.1
Vocational concentrators only			
New Basics core academics total	4.5	12.2	21.7
English - 4 years	56.9	76.3	86.3
Mathematics - 3 years	28.1	52.3	64.3
Science - 3 years	12.5	23.0	34.4
Social studies - 3 years	61.9	76.5	82.5
Both vocational concentration and college preparatory			
New Basics core academics total	38.3	74.3	86.0
English - 4 years	100.0	100.0	100.0
Mathematics - 3 years	100.0	100.0	100.0
Science - 3 years	54.1	86.7	94.4
Social studies - 3 years	76.0	84.8	91.4
College preparatory			
New Basics core academics total	65.4	84.1	90.2
English - 4 years	100.0	100.0	100.0
Mathematics - 3 years	100.0	100.0	100.0
Science - 3 years	86.0	91.5	95.1
Social studies - 3 years	76.8	91.0	94.8
Other/general			
New Basics core academics total	10.3	24.2	30.1
English - 4 years	60.4	77.3	79.9
Mathematics - 3 years	48.3	65.6	72.8
Science - 3 years	30.6	43.5	51.4
Social studies - 3 years	69.9	87.9	88.6

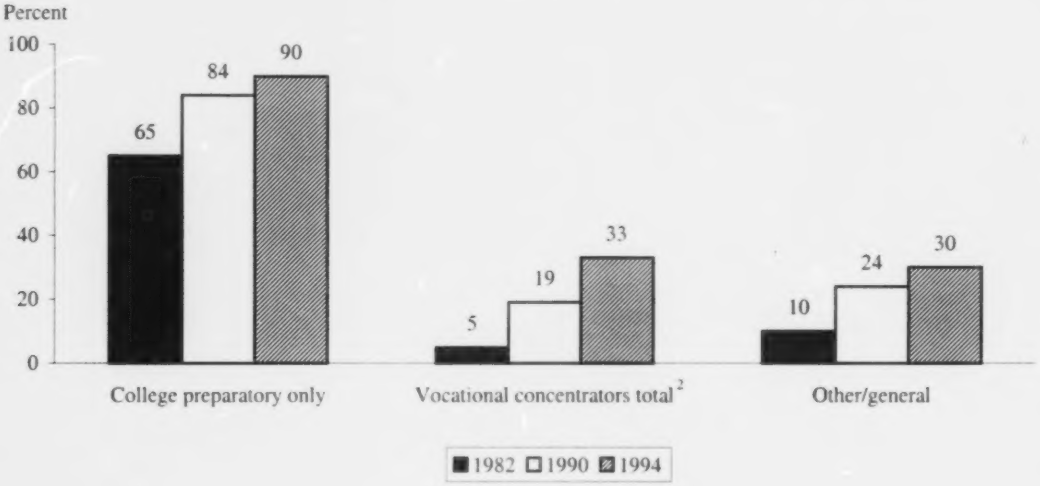
[1] The New Basics core academic standards include 4 years of English and 3 years each of mathematics, science, and social studies.

[2] This category includes some vocational concentrators who also completed a college preparatory curriculum.

SOURCE: U.S. Department of Education, National Center for Education Statistics, High School and Beyond Sophomore Cohort 1982 High School Transcript Study and 1990 and 1994 National Assessment of Educational Progress High School Transcript Studies.

- In 1994, vocational concentrators were less likely than graduates completing a college preparatory curriculum to meet the core academic standards (33 versus 90 percent), but were just as likely as graduates completing general coursework to do so (33 versus 30 percent) (table 23; figure 16).[59] The percentage of vocational concentrators meeting these standards increased from 5 percent in 1982. The percentage of vocational concentrators meeting the core academic standards in 1994 was about six times the percentage in 1982, compared with an increase of about three times for other/general students and of about 38 percent for college preparatory students.

Figure 16—Percentage of public high school graduates meeting the New Basics core academic standards,[1] by curriculum specialization in high school: 1982, 1990, and 1994



[1] The New Basics core academic standards include 4 years of English and 3 years each of mathematics, science, and social studies.

[2] Includes students who completed both a vocational concentration and a college preparatory curriculum.

SOURCE: U.S. Department of Education, National Center for Education Statistics, High School and Beyond Sophomore Cohort 1982 High School Transcript Study and 1990 and 1994 National Assessment of Educational Progress High School Transcript Studies.

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[59] It should be remembered that these three high school groups were classified based on their high school course-taking histories. While the "New Basics" academic standards and college preparatory criteria used in this publication were similar, the overlap between them was not complete (90 percent of college preparatory students fulfilled the New Basics standards). (See the college preparatory criteria described at the beginning of this chapter.) Since students who met both the vocational concentrator and college preparatory criteria were included in the vocational group, all vocational concentrators could meet the New Basics standards, at least theoretically. However, since the general group was the residual group that met neither the vocational nor college preparatory criteria, this group might be less likely to meet the New Basics academic standards.

- The percentage of vocational concentrators completing the science standard increased from 13 to 45 percent between 1982 and 1994 (table 23). However, vocational concentrators were least likely to meet the science standard than any other core academic standard in 1994. While 45 percent of vocational concentrators met the science standard in 1994, 71 percent met the mathematics standard, 84 percent the social studies standard, and 89 percent the English standard. Students who completed general coursework in high school were also least likely to meet the science standard versus other standards.

- The percentage of public high school graduates completing both a vocational concentration and a college preparatory curriculum increased seven and a half times, from 0.6 in 1982 to 4.5 percent in 1994 (table 24). The percentage of graduates completing neither a vocational concentration nor a college preparatory curriculum decreased from about 58 percent in 1982 to 42 percent in 1994. In 1994, more students still completed general coursework in high school than completed either a vocational concentration or a college preparatory curriculum.

Table 24—Percentage distribution of public high school graduates according to curriculum specialization in high school: 1982, 1990, and 1994

Curriculum specialization	1982	1990	1994
Total	100.0	100.0	100.0
College preparatory only	8.1	25.9	32.2
Vocational concentrators total*	33.7	27.8	25.4
Vocational concentration only	33.1	25.0	20.9
Both vocational concentration and college preparatory	0.6	2.8	4.5
Other/general	58.2	46.3	42.4

*Includes students who completed both a vocational concentration and a college preparatory curriculum.

NOTE: Percentages may not add to 100 due to rounding.

SOURCE: U.S. Department of Education, National Center for Education Statistics, High School and Beyond Sophomore Cohort 1982 High School Transcript Study and 1990 and 1994 National Assessment of Educational Progress High School Transcript Studies.

- The average number of credits vocational concentrators earned in English increased from 3.8 to 4.2 between 1982 and 1994, an increase of about 10 percent (table 25). However, the share of all English credits vocational concentrators earned in low-level courses also increased over this period.

Table 25—Average number of credits earned by public high school graduates in English, and the percentage of total English coursework earned in low-level courses (language skills, functional, and basic English), by curriculum specialization in high school: 1982, 1990, and 1994

Curriculum specialization	Total English credits	Low-level English credits	Percent of total English credits that are low-level[1]
		1982	
All graduates	3.93	0.36	8.8
Vocational concentrators total[2]	3.79	0.40	10.5
Vocational concentrators only	3.79	0.41	10.6
Both vocational concentration and college preparatory	4.21	0.16	3.4
College preparatory	4.43	0.20	4.4
Other/general	3.95	0.35	8.5
		1990	
All graduates	4.19	0.40	9.2
Vocational concentrators total[2]	4.02	0.57	13.8
Vocational concentrators only	4.00	0.63	5.6
Both vocational concentration and college preparatory	4.21	0.07	0.8
College preparatory	4.37	0.06	1.4
Other/general	4.19	0.48	10.7
		1994	
All graduates	4.29	0.40	8.9
Vocational concentrators total[2]	4.16	0.51	11.9
Vocational concentrators only	4.13	0.60	13.9
Both vocational concentration and college preparatory	4.26	0.12	2.8
College preparatory	4.42	0.15	3.3
Other/general	4.26	0.52	11.4

[1] These percentages are the average rates calculated for each student in the population.

[2] This category includes some vocational concentrators who also completed a college preparatory curriculum.

SOURCE: U.S. Department of Education, National Center for Education Statistics, High School and Beyond Sophomore Cohort 1982 High School Transcript Study and 1990 and 1994 National Assessment of Educational Progress High School Transcript Studies.

- The number of credits vocational concentrators earned in U.S. and World History increased from 1.4 in 1982 to 1.7 in 1994, an increase of about 24 percent (table 26).

Table 26—Average number of Carnegie units accumulated by public high school graduates in social studies, by curriculum specialization in high school and type of social studies coursework: 1982, 1990, and 1994

Curriculum specialization and type of coursework	1982	1990	1994
All graduates			
Total social studies	3.14	3.47	3.55
U.S./world history	1.41	1.68	1.74
Vocational concentrators total*			
Total social studies	3.00	3.19	3.30
U.S./world history	1.35	1.62	1.67
Vocational concentrators only			
Total social studies	3.00	3.18	3.26
U.S./world history	1.34	1.59	1.64
Both vocational concentration and college preparatory			
Total social studies	3.18	3.33	3.47
U.S./world history	1.59	1.89	1.79
College preparatory			
Total social studies	3.37	3.61	3.69
U.S./world history	1.73	1.87	1.86
Other/general			
Total social studies	3.19	3.57	3.60
U.S./world history	1.41	1.61	1.69

*This category includes some vocational concentrators who also completed a college preparatory curriculum.

SOURCE: U.S. Department of Education, National Center for Education Statistics, High School and Beyond Sophomore Cohort 1982 High School Transcript Study and 1990 and 1994 National Assessment of Educational Progress High School Transcript Studies.

- The percentage of all graduates taking Algebra 1 in high school increased from 59 percent in 1982 to 69 percent in 1994, an increase of 17 percent (table 27). Over the same period, the percentage of vocational concentrators taking this subject increased from 52 to 67 percent, an increase of 29 percent. The total number of credits vocational concentrators earned in mathematics increased steadily from 2.3 in 1982 to 3.0 in 1994 (table 28). The number of credits earned in courses below the Algebra 1 level increased from .95 in 1982 to 1.2 in 1990, and then fell again to .95 in 1994. The share of total mathematics credits that these below-algebra credits represented fell steadily from 47 percent in 1982, to 44 percent in 1990, to 35 percent in 1994.

Table 27—Percentage of high school graduates completing coursework in mathematics, by curriculum specialization in high school and type of mathematics coursework: 1982, 1990, and 1994

Curriculum specialization and type of coursework	1982	1990	1994
All graduates			
Total mathematics	99.7	100.0	100.0
Algebra I	58.5	66.0	69.0
Vocational concentrators total*			
Total mathematics	99.5	100.0	99.9
Algebra I	51.8	58.8	66.6
Vocational concentration only			
Total mathematics	99.5	100.0	99.9
Algebra I	51.3	56.6	64.6
Both vocational concentration and college preparatory			
Total mathematics	100.0	100.0	100.0
Algebra I	81.5	77.7	75.7
College preparatory			
Total mathematics	100.0	100.0	100.0
Algebra I	73.7	72.6	71.2
Other/general			
Total mathematics	99.7	100.0	100.0
Algebra I	60.2	66.6	68.8

*This category includes some vocational concentrators who also completed a college preparatory curriculum.

SOURCE: U.S. Department of Education, National Center for Education Statistics, High School and Beyond Sophomore Cohort 1982 High School Transcript Study and 1990 and 1994 National Assessment of Educational Progress High School Transcript Studies.

Table 28—Average number of credits earned by public high school graduates in mathematics, and the percentage of total mathematics coursework earned in below-algebra courses, by curriculum specialization in high school: 1982, 1990, and 1994

Curriculum specialization	Total mathematics credits	Below-algebra credits	Percent of total mathematics credits that are below-algebra[1]
		1982	
All graduates	2.62	0.83	37.3
Vocational concentrators total[2]	2.25	0.95	46.8
Vocational concentration only	2.23	0.97	47.6
Both vocational concentration and college preparatory	3.52	0.13	3.2
College preparatory	3.84	0.15	3.4
Other/general	2.66	0.85	36.6
		1990	
All graduates	3.15	0.81	29.5
Vocational concentrators total[2]	2.80	1.15	44.4
Vocational concentration only	2.70	1.26	49.0
Both vocational concentration and college preparatory	3.67	0.15	3.7
College preparatory	3.79	0.12	2.9
Other/general	3.00	0.99	35.3
		1994	
All graduates	3.33	0.68	23.4
Vocational concentrators total[2]	3.01	0.95	34.6
Vocational concentration only	2.87	1.14	41.6
Both vocational concentration and college preparatory	3.70	0.10	2.5
College preparatory	3.86	0.11	2.6
Other/general	3.12	0.96	32.5

[1] These percentages are the average rates calculated for each student in the population.

[2] This category includes some vocational concentrators who also completed a college preparatory curriculum.

SOURCE: U.S. Department of Education, National Center for Education Statistics, High School and Beyond Sophomore Cohort 1982 High School Transcript Study and 1990 and 1994 National Assessment of Educational Progress High School Transcript Studies.

- During this same period, the number of credits vocational concentrators earned in biology, chemistry, and physics rose from .96 to 1.6, an increase of 68 percent (table 29). In 1994, vocational concentrators completed, on average, one biology course. In addition, about one in three vocational concentrators completed a chemistry course in 1994, and one in eight, a physics course (table 30). The proportion of science credits vocational concentrators earned that were at the basic level decreased steadily from 37 percent in 1982, to 24 percent in 1990, to 21 percent in 1994 (table 29).

Academic Achievement Gains

As discussed in the Introduction to this report, the purpose of vocational education has broadened over the last 15 years to include increasing the academic achievement of students participating in vocational programs. In addition to improving the rigor of the academic courses that students in vocational programs take, education reformers advocate strengthening the academic content of vocational coursework.[60] This section of the report examines the academic achievement gains of 1992 public high school graduates. These gains were measured using mathematics, reading, and science test scores in the 8th, 10th, and 12th grades. Composite test results combining scores for all three subjects were also examined.

Since the relationship between academic achievement and participation in the vocational curriculum is complex, results must be interpreted cautiously. Descriptive analyses typically find that increased vocational coursetaking is associated with lower academic achievement.[61] However, attributing this lower achievement to participation in the vocational curriculum could be misleading. An alternate explanation for the inverse association between achievement and vocational program participation is that, at least historically, lower-achieving students have opted or been encouraged to follow a vocational program of study in high school. Thus, the gap in academic achievement between vocational concentrators and other students may be attributed, at least partly, to their initial differences in achievement. Moreover, these initially low-achieving students are likely to complete less rigorous academic coursework during high school than their

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[60] Education research has shown that applied learning can contribute to academic achievement. For example, in a regression analysis using HS&B data, Meyer found that courses incorporating applied mathematics content, including mathematically relevant vocational courses, contributed positively to students' mathematics achievement gains between the 10th and 12th grades. Rasinski, on the other hand, did not find that vocational coursework contributed to academic gains, although he used different equation specifications than Meyer. See R. Meyer, "Applied Versus Traditional Mathematics: New Econometric Models of the Contribution of High School Courses to Mathematics Proficiency" (Discussion paper no. 966-92) (Madison: University of Wisconsin-Madison, 1992); K. Rasinski and S. Pedlow, "Using Transcripts to Study the Effectiveness of Vocational Education," *Journal of Vocational Education Research* 19 (3) (1994): 23–44.

[61] See, for example, A. McCormick, J. Tuma, and J. Houser, *Vocational Course Taking and Achievement: An Analysis of High School Transcripts and 1990 NAEP Assessment Scores* (Washington, D.C.: U.S. Department of Education, National Center for Education Statistics, 1995).

Table 29—Average number of credits earned by public high school graduates in science, and the percentage of total science coursework earned at the basic level, by curriculum specialization in high school: 1982, 1990, and 1994

Curriculum specialization and type of coursework	Total science credits	Biology, chemistry, physics credits	Biology credits	Basic-level science credits	Percent of total science credits earned at basic level[1]
			1982		
All graduates	2.17	1.42	0.93	0.62	32.0
Vocational concentrators total[2]	1.74	0.96	0.73	0.59	36.5
Vocational concentration only	1.72	0.93	0.73	0.59	36.8
Both vocational concentration and college preparatory	2.81	2.41	1.18	0.64	20.8
College preparatory	3.56	2.95	1.37	0.72	20.6
Other/general	2.23	1.48	0.98	0.62	31.1
			1990		
All graduates	2.75	1.90	1.14	0.45	18.7
Vocational concentrators total[2]	2.26	1.34	1.00	0.50	23.8
Vocational concentration only	2.15	1.19	0.97	0.51	25.1
Both vocational concentration and college preparatory	3.30	2.63	1.24	0.39	11.9
College preparatory	3.56	2.91	1.33	0.30	8.7
Other/general	2.60	1.67	1.12	0.50	21.2
			1994		
All graduates	3.04	2.15	1.26	0.46	16.9
Vocational concentrators total[2]	2.59	1.61	1.13	0.50	20.9
Vocational concentration only	2.39	1.38	1.09	0.54	23.3
Both vocational concentration and college preparatory	3.49	2.68	1.32	0.35	9.8
College preparatory	3.78	3.07	1.46	0.35	9.6
Other/general	2.76	1.78	1.18	0.51	20.0

[1] These percentages are the average rates calculated for each student in the population.

[2] This category includes some vocational concentrators who also completed a college preparatory curriculum.

SOURCE: U.S. Department of Education, National Center for Education Statistics, High School and Beyond Sophomore Cohort 1982 High School Transcript Study and 1990 and 1994 National Assessment of Educational Progress High School Transcript Studies.

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Table 30—Percentage of public high school graduates completing coursework in chemistry and physics, by curriculum specialization in high school: 1982, 1990, and 1994

Curriculum specialization and type of coursework	1982	1990	1994
All graduates			
Chemistry	31.5	49.7	57.4
Physics	16.7	23.1	27.4
Vocational concentrators total*			
Chemistry	15.0	24.6	34.6
Physics	7.8	9.7	13.0
Vocational concentrators only			
Chemistry	13.7	17.0	22.7
Physics	7.4	6.6	7.6
Both vocational concentration and college preparatory			
Chemistry	88.8	92.0	89.6
Physics	29.8	37.4	38.0
College preparatory			
Chemistry	89.2	94.9	94.1
Physics	53.7	50.4	52.3
Other/general			
Chemistry	32.9	39.5	43.1
Physics	16.8	16.0	17.1

*This category includes some vocational concentrators who also completed a college preparatory curriculum.

SOURCE: U.S. Department of Education, National Center for Education Statistics, High School and Beyond Sophomore Cohort 1982 High School Transcript Study and 1990 and 1994 National Assessment of Educational Progress High School Transcript Studies.

higher-achieving peers, thereby compounding their academic disadvantage and possibly widening the achievement gap.

Using the National Education Longitudinal Study of 1988 (NELS:88), it was possible to examine the relationship between students' achievement in the 8th grade and their subsequent coursetaking in high school. The analysis found that lower-achieving 8th graders were more likely to become vocational concentrators in high school than their higher-achieving counterparts. For example, 33 percent of 1992 public high school graduates who scored in the lowest composite test quartile in the 8th grade became vocational concentrators only (not also completing the college preparatory criteria), in comparison with 8 percent of graduates who scored in the highest 8th-grade composite test quartile—a difference of a factor of 4 (table 31). Thus, there is

Table 31—Percentage distribution of 1988 8th graders according to subsequent specialization in high school, by 8th-grade composite test score quartiles: 1992

		Vocational concentrators			
Test score quartile	College preparatory only	Total*	Vocational concentration only	Vocational concentration and college preparatory	Other/ general
Total	28.5	25.0	21.7	3.4	46.4
1st quartile (lowest)	5.3	33.7	33.2	0.5	61.0
2nd quartile	14.8	29.3	26.6	2.7	55.8
3rd quartile	32.6	26.1	21.9	4.3	41.3
4th quartile (highest)	55.7	12.3	7.6	4.7	32.0

*Includes students who completed both a vocational concentration and a college preparatory curriculum.

NOTE: Percentages may not add to 100 due to rounding.

SOURCE: U.S. Department of Education, National Center for Education Statistics, National Education Longitudinal Study of 1988, Second Follow-up and High School Transcript Study.

some evidence that lower-achieving students were, in fact, more likely than higher-achieving students to concentrate in vocational education in high school, at least as of 1992.

There is also evidence that these initial 8th-grade differences in achievement may have been compounded by differential course-taking patterns in high school. Variations exist in the amount and rigor of academic courses taken by students completing different types of curricula. These differences were reflected in the NELS:88 data for 1992 graduates. Vocational concentrators had academic course-taking patterns that were more like those of graduates who completed general coursework in high school than like those of college preparatory graduates.

For example, vocational concentrators and other/general students were more likely than their college preparatory peers to take lower-level English courses (such as language skills and functional and basic courses) (table 32a). Vocational concentrators also completed more mathematics courses at a level lower than Algebra 1 than did both college preparatory and other/general students (table 32b). Even when controlling for prior achievement—as measured by 8th-grade mathematics test score quartiles—lower-level mathematics coursetaking was generally dissimilar for these groups of students (figure 17).[62]

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[62] The difference between vocational concentrators and the general group in terms of the percentage of low-level mathematics courses taken was not statistically significant for the highest 8th-grade test quartile.

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Table 32a—Average number of credits earned by 1992 public high school graduates in various English courses and average number and percentage of credits earned in low-level courses,[1] by curriculum specialization in high school

Curriculum specialization	Average number of total credits	Average number of advanced credits	Average number of low-level credits	Percent of total credits that are low-level[2]
Total	4.23	0.52	0.37	8.5
College preparatory only	4.40	1.15	0.08	1.7
Vocational concentrators total[3]	4.10	0.24	0.60	14.5
Vocational concentration only	4.07	0.15	0.67	16.1
Both vocational concentration and college preparatory	4.35	0.88	0.19	4.0
Other/general	4.20	0.28	0.41	9.4

[1] These include language skills and functional and basic English courses.

[2] These percentages are the average rates calculated for each student in the population.

[3] Includes students who completed both a vocational concentration and a college preparatory curriculum.

SOURCE: U.S. Department of Education, National Center for Education Statistics, National Education Longitudinal Study of 1988, Second Follow-up and High School Transcript Study.

Table 32b—Average number of credits earned by 1992 public high school graduates in various mathematics courses and average number and percentage of credits earned in low-level courses,[1] by curriculum specialization in high school

Curriculum specialization	Average number of total credits	Average number of precalculus credits	Average number of low-level credits	Percent of total credits that are low-level[2]
Total	3.22	0.82	0.71	25.2
College preparatory only	3.84	1.57	0.10	2.4
Vocational concentrators total[3]	2.86	0.49	1.02	39.4
Vocational concentration only	2.73	0.33	1.16	45.2
Both vocational concentration and college preparatory	3.71	1.53	0.10	2.4
Other/general	3.04	0.54	0.91	31.6

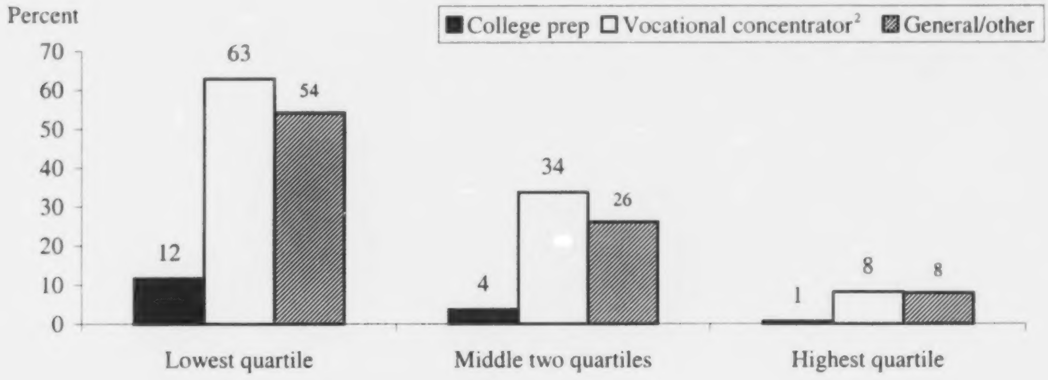
[1] These include general and consumer mathematics and pre-algebra courses.

[2] These percentages are the averages rates calculated for each student in the population.

[3] Includes students who completed both a vocational concentration and a college preparatory curriculum.

SOURCE: U.S. Department of Education, National Center for Education Statistics, National Education Longitudinal Study of 1988, Second Follow-up and High School Transcript Study.

Figure 17—Average percentage of credits earned in low-level[1] mathematics courses according to 8th-grade mathematics test quartiles, by curriculum specialization in high school: 1992



[1] These include general and consumer mathematics and pre-algebra courses.

[2] Includes students who completed both a vocational concentration and a college preparatory curriculum.

SOURCE: U.S. Department of Education, National Center for Education Statistics, National Education Longitudinal Study of 1988, Second Follow-up and High School Transcript Study.

In contrast, college preparatory students were more likely to complete more and higher-level courses in English, mathematics, and science than their vocational and other/general peers (tables 32a–c). On average, college preparatory students took 3.8 credits in mathematics, 4.4 credits in English, and 3.7 credits in science, while their vocational peers completed 2.9 credits in mathematics, 4.1 credits in English, and 2.5 credits in science. Furthermore, college preparatory students earned, on average, 1.6 credits in precalculus, 0.5 credits in physics, and 1.2 credits in advanced English, whereas vocational concentrators completed 0.5 credits in precalculus, 0.1 credits in physics, and 0.2 credits in advanced English.

Given these differences in initial achievement and academic coursework in high school, a gap in academic gains would not be unexpected, particularly between the vocational concentrator and college preparatory groups. In fact, 1992 vocational concentrators did exhibit lower test score gains in reading, mathematics, and science than their college preparatory peers, but more similar gains to graduates who completed general coursework in high school (table 33). This was generally true for 8th- to 10th-grade gains, 10th- to 12th-grade gains, and 8th- to 12th-grade gains.[63]

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[63] The difference between vocational concentrators and the college preparatory group in terms of test score gains was not statistically significant for reading gains between the 10th and 12th grades. Differences between vocational concentrators and the other/general group were statistically different for 8th- to 10th-grade and 8th- to 12th-grade gains in reading and 10th- to 12th-grade and 8th- to 12th-grade gains in mathematics. Vocational concentrator gains in science were statistically indistinguishable from gains in science for the other/general group for all gain years.

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Table 32c—Average number of credits earned by 1992 public high school graduates in science and physics courses, by curriculum specialization in high school

Curriculum specialization	Average number of science credits	Average number of physics credits
Total	2.89	0.26
College preparatory only	3.66	0.54
Vocational concentrators total*	2.47	0.13
Vocational concentration only	2.30	0.08
Both vocational concentration and college preparatory	3.53	0.44
Other/general	2.63	0.16

*Includes students who completed both a vocational concentration and a college preparatory curriculum.

SOURCE: U.S. Department of Education, National Center for Education Statistics, National Education Longitudinal Study of 1988, Second Follow-up and High School Transcript Study.

Table 33—Average 8–10th, 10–12th, and 8–12th grade test score gains in reading, mathematics, and science for 1992 public high school graduates, by curriculum specialization in high school

	8–10th			10–12th			8–12th		
Curriculum specialization	Reading	Math	Science	Reading	Math	Science	Reading	Math	Science
Total	8.5	14.2	0.2	11.5	11.4	9.3	20.0	25.6	9.4
College preparatory only	10.3	16.7	0.7	12.8	13.2	10.0	23.1	29.8	10.6
Vocational concentrators total*	7.3	12.8	-0.2	10.5	10.2	8.9	17.9	23.0	8.7
Vocational concentration only	6.9	12.3	-0.4	10.3	9.7	8.8	17.2	22.0	8.5
Both vocational concentration and college preparatory	9.8	15.9	0.7	11.6	12.8	9.3	21.6	28.5	10.1
Other/general	8.0	13.3	0.0	11.0	10.9	9.0	19.0	24.1	9.1

*Includes students who completed both a vocational concentration and a college preparatory curriculum.

NOTE: Estimates appearing as 0.0 may be nonzero but less than 0.05.

SOURCE: U.S. Department of Education, National Center for Education Statistics, National Education Longitudinal Study of 1988, Second Follow-up and High School Transcript Study.

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The usual statistical method for attempting to control for and separate out the various factors contributing to academic achievement—multivariate regression analysis—was beyond the scope of this study. However, this analysis attempted to reduce in two ways the bias that may be due to vocational concentrators having lower initial academic achievement. First, by examining gains at two or more points in time, rather than achievement at a single point in time, the analysis effectively controlled for those characteristics that are consistent over time.[64] Second, the analysis used three-way tables to control for prior academic achievement as measured by the student's 8th-grade test quartile. However, despite this partial control for prior achievement, many differences among the vocational concentrator, college preparatory, and other/general groups remained statistically significant (tables 34–36). For example, among students who were in the middle two test quartiles in the 8th grade, vocational concentrators gained 18 test score points in reading and 23 in mathematics by the 12th grade, in comparison with 19 and 24 points for other/general students and 22 and 29 points for college preparatory students, in reading and mathematics, respectively (figure 18).[65]

Table 34—Average 8–10th, 10–12th, and 8–12th grade test score gains in mathematics for 1992 public high school graduates according to 8th-grade mathematics test score quartiles, by curriculum specialization in high school

	Lowest quartile			Middle two quartiles			Highest quartile		
Curriculum specialization	8–10th	10–12th	8–12th	8–10th	10–12th	8–12th	8–10th	10–12th	8–12th
Total	11.9	9.0	20.8	14.0	11.0	25.1	15.9	13.5	29.2
College preparatory only	16.0	11.6	27.6	17.0	11.9	29.2	16.4	14.2	30.5
Vocational concentrators total*	10.7	8.6	19.3	12.9	10.2	22.9	14.9	12.4	27.6
Vocational concentration only	10.6	8.5	19.0	12.5	9.9	22.3	14.4	11.6	26.4
Both vocational concentration and college preparatory	—	—	—	15.9	12.0	27.4	16.0	13.7	29.8
Other/general	12.0	8.9	20.7	13.2	11.0	24.3	15.3	12.9	27.5

—Too few sample observations for a reliable estimate.

*Includes students who completed both a vocational concentration and a college preparatory curriculum.

SOURCE: U.S. Department of Education, National Center for Education Statistics, National Education Longitudinal Study of 1988, Second Follow-up and High School Transcript Study.

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[64] For example, a gains analysis should control for initial academic achievement differences. However, it does not control for effects that might accrue over time due to those initial differences—such as different high school course-taking patterns resulting from 8th-grade achievement differences.

[65] The 18-point reading gain for vocational concentrators and the 19-point reading gain for other/general students were not statistically different.

Table 35—Average 8–10th, 10–12th, and 8–12th grade test score gains in reading for 1992 public high school graduates according to 8th-grade reading test score quartiles, by curriculum specialization in high school

	Lowest quartile			Middle two quartiles			Highest quartile		
Curriculum specialization	8–10th	10–12th	8–12th	8–10th	10–12th	8–12th	8–10th	10–12th	8–12th
Total	6.9	9.4	16.6	8.2	11.2	19.5	10.1	13.2	23.0
College preparatory only	9.2	10.4	19.9	9.9	12.0	21.9	10.8	13.6	24.4
Vocational concentrators total*	6.6	8.8	15.7	7.3	10.8	18.0	8.5	12.4	21.0
Vocational concentration only	6.4	8.8	15.5	7.0	10.7	17.6	7.7	12.2	19.9
Both vocational concentration and college preparatory	12.8	—	19.9	8.8	11.2	20.5	10.4	13.0	23.6
Other/general	6.9	9.7	16.7	7.8	11.0	19.0	9.7	12.8	21.7

—Too few sample observations for a reliable estimate.

*Includes students who completed both a vocational concentration and a college preparatory curriculum.

SOURCE: U.S. Department of Education, National Center for Education Statistics, National Education Longitudinal Study of 1988, Second Follow-up and High School Transcript Study.

Table 36—Average 8–10th, 10–12th, and 8–12th grade test score gains in science for 1992 public high school graduates according to 8th-grade science test score quartiles, by curriculum specialization in high school

	Lowest quartile			Middle two quartiles			Highest quartile		
Curriculum specialization	8–10th	10–12th	8–12th	8–10th	10–12th	8–12th	8–10th	10–12th	8–12th
Total	1.3	8.3	9.5	0.2	9.2	9.3	-0.6	10.2	9.6
College preparatory only	2.4	8.2	10.5	1.0	10.1	10.9	0.1	10.3	10.3
Vocational concentrators total*	1.1	8.2	9.3	-0.4	8.8	8.5	-1.4	9.7	8.5
Vocational concentration only	1.0	8.2	9.3	-0.6	8.8	8.2	-1.9	9.7	8.0
Both vocational concentration and college preparatory	—	—	—	0.8	8.9	9.9	0.1	9.9	10.2
Other/general	1.1	8.4	9.5	0.0	8.8	8.8	-1.0	10.3	9.1

—Too few sample observations for a reliable estimate.

*Includes students who completed both a vocational concentration and a college preparatory curriculum.

NOTE: Estimates appearing as 0.0 may be nonzero but less than 0.05.

SOURCE: U.S. Department of Education, National Center for Education Statistics, National Education Longitudinal Study of 1988, Second Follow-up and High School Transcript Study.

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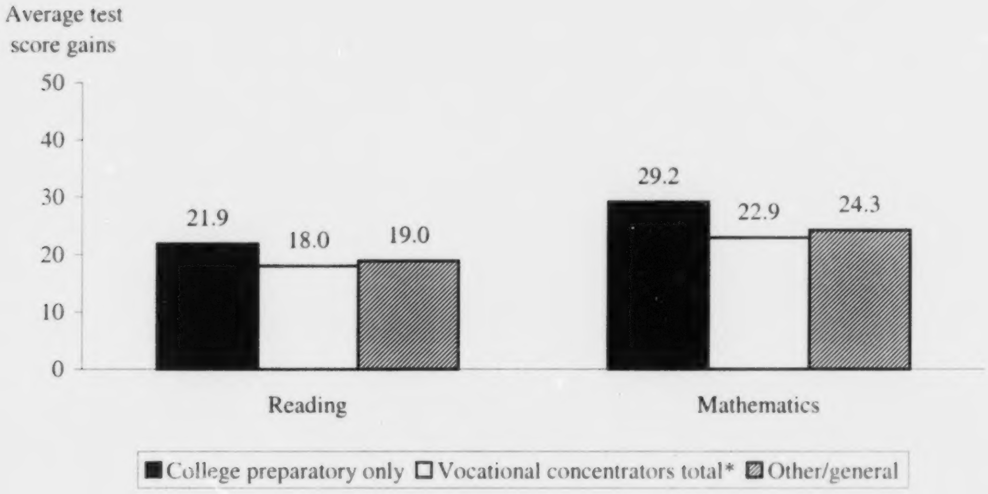
Figure 18—Average 8–12th grade test score gains in reading and mathematics for 1992 public high school graduates who scored in the middle two quartiles on the 8th-grade reading and mathematics tests, by curriculum specialization in high school



*Includes students who completed both a vocational concentration and a college preparatory curriculum.

SOURCE: U.S. Department of Education, National Center for Education Statistics, National Education Longitudinal Study of 1988, Second Follow-up and High School Transcript Study.

One finding of this analysis was that the academic coursework of vocational concentrators who also completed a college preparatory curriculum was more like the coursework of the college preparatory group than like that of other vocational concentrators. For example, this academically oriented group of vocational concentrators earned fewer low-level mathematics and English credits than their strictly vocational counterparts (tables 32a,b and 37). In keeping with this similarity in coursetaking, the test score gains for vocational concentrators who also completed a college preparatory curriculum were generally statistically indistinguishable from those of the college preparatory group, and these vocational concentrators generally outperformed their vocational peers who did not complete a college preparatory curriculum (tables 33–36).

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Table 37—Average number of credits earned by 1992 public high school graduates in various mathematics and precalculus courses and average number and percentage of credits earned in low-level mathematics courses[1] according to 8th-grade mathematics test score quartiles, by curriculum specialization in high school

Curriculum specialization	Average number of math credits	Average number of precalculus credits	Average number of low-level math credits	Percent of total math credits that are low-level[2]
Lowest quartile				
Total	2.88	0.23	1.49	54.0
College preparatory only	3.80	1.10	0.46	11.0
Vocational concentrators total[3]	2.73	0.13	1.67	62.9
Vocational concentration only	2.71	0.10	1.71	64.3
Both vocational concentration and college preparatory	—	—	—	—
Other/general	2.85	0.19	1.51	54.2
Middle two quartiles				
Total	3.17	0.74	0.65	22.8
College preparatory only	3.75	1.45	0.15	3.7
Vocational concentrators total[3]	2.84	0.47	0.87	33.7
Vocational concentration only	2.73	0.34	0.97	38.0
Both vocational concentration and college preparatory	3.62	1.39	0.15	3.6
Other/general	3.07	0.53	0.77	26.1
Highest quartile				
Total	3.62	4.02	0.12	4.0
College preparatory only	3.90	1.69	0.03	0.7
Vocational concentrators total[3]	3.29	1.21	0.22	8.1
Vocational concentration only	3.01	0.97	0.31	11.8
Both vocational concentration and college preparatory	3.84	1.69	0.03	0.7
Other/general	3.28	1.14	0.24	7.9

—Too few sample observations for a reliable estimate.

[1] These include general and consumer mathematics and pre-algebra courses.

[2] These percentages are the average rates calculated for each student in the population.

[3] Includes students who completed both a vocational concentration and a college preparatory curriculum.

SOURCE: U.S. Department of Education, National Center for Education Statistics, National Education Longitudinal Study of 1988, Second Follow-up and High School Transcript Study.

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This suggests that the achievement gap may be narrowed by providing students in vocational programs with a challenging academic curriculum. However, it may also be that vocational concentrators who also take a college preparatory curriculum are different from other vocational concentrators in ways that impact academic achievement. For example, as 8th-grade achievement increased, so did the likelihood that students would meet both the vocational concentrator and college preparatory criteria in high school. In contrast, 8th-grade achievement was inversely related to the likelihood of students meeting only the vocational concentrator criteria (table 31). The direct impact of vocational concentrators taking more rigorous academic coursework cannot be determined by these descriptive data.

SCHOOL REFORM EFFORTS

By 1997, public comprehensive high schools reported implementing some vocational education-related reforms, although the quality and specific forms of these efforts were not discernible from the available survey data.[66] About half of these schools reported integrating academic and vocational education, and a similar proportion reported offering tech prep. Fewer schools reported having block scheduling, career majors, school-based enterprises, skill standards, or skill or occupational certificates. Generally, schools with career academies and larger schools were more likely to report these reforms, while rural schools were less likely to do so.

- In 1997, 90 percent of public high schools reported that teachers attended conferences on integrating academic and vocational education, and almost half (45 percent) reported actually integrating these curricula (table 38; figure 19). Schools with career academies were more likely than other schools to report that academic and vocational curricula were being integrated, with 78 percent of career academy schools reporting such activity. Rural schools were less likely to implement integration, as were smaller schools. As mentioned above, it is not possible from the available data to discern the quality and specific forms of the integration activities reported.

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[66] NLSY provided information on public schools with a 12th grade. For simplicity's sake, this section refers to these schools as public high schools. Because vocational schools were mistakenly excluded from the sample, the survey generally describes comprehensive high schools, rather than all high schools, which may provide a conservative estimate of local reform efforts. Also, survey respondents were not asked to describe their reform efforts in any detail; therefore, it is not possible to know what activities they classified as integration, tech-prep, and other reform efforts.

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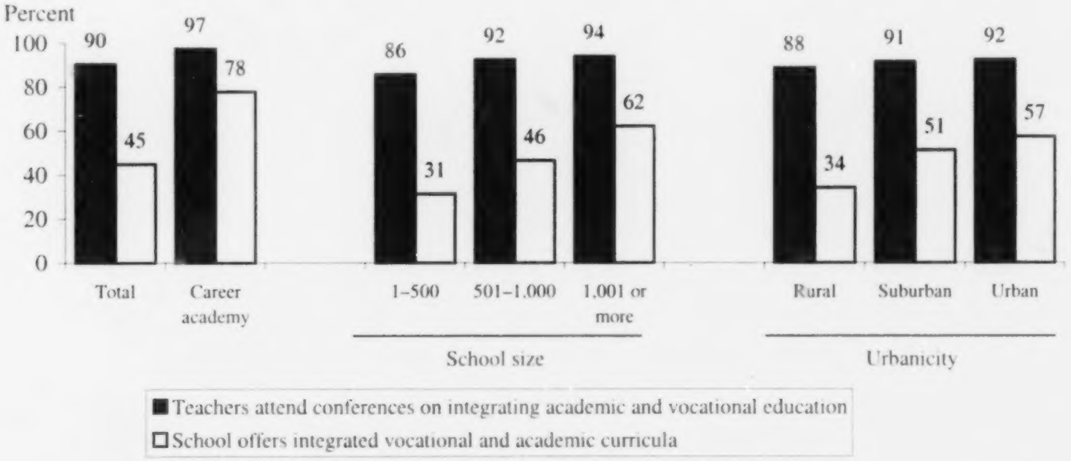
Table 38—Percentage of public schools reporting various efforts to integrate academic and vocational education, by selected school characteristics: 1997

Selected school characteristics	Teachers attend conferences on integrating academic and vocational education	School offers integrated academic and vocational curricula
Total	90.4	45.0
Student enrollment		
1–500	85.7	31.3
501–1,000	92.4	46.4
1,001 or more	93.9	62.0
Urbanicity		
Urban	92.2	57.1
Suburban	91.3	51.0
Rural	88.4	34.1
Career academy		
Yes	97.3	77.8
No	90.3	45.2

NOTE: The sample is made up of public schools with a 12th grade. Schools that were identified by school district officials as primarily vocational in nature were not included in the sampling frame.

SOURCE: U.S. Department of Labor, Bureau of Labor Statistics, National Longitudinal Survey of Youth, 1996–97.

Figure 19—Percentage of public schools reporting various efforts to integrate academic and vocational education, by selected school characteristics: 1997



NOTE: The sample is made up of public schools with a 12th grade. Schools that were identified by school district officials as primarily vocational in nature were not included in the sampling frame.

SOURCE: U.S. Department of Labor, Bureau of Labor Statistics, National Longitudinal Survey of Youth, 1996–97.

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- About 50 percent of public high schools offered tech prep (table 39; figure 20).[67] Schools more likely to offer this program included schools in the Midwest and West (versus those in the Northeast and South); suburban schools (with urban schools second and rural schools last); schools with a career academy (versus those without); and larger schools.

Table 39—Percentage of public schools offering tech-prep education, by selected characteristics: 1997

Selected characteristics	Tech-prep education
Total	50.1
Student enrollment	
1–500	40.0
501–1,000	54.6
1,001 or more	59.1
Urbanicity	
Urban	50.5
Suburban	61.0
Rural	37.6
Career academy	
Yes	77.3
No	51.7
Region	
Northeast	37.8
Midwest	61.9
West	60.3
South	43.2

NOTE: The sample is made up of public schools with a 12th grade. Schools that were identified by school district officials as primarily vocational in nature were not included in the sampling frame.

SOURCE: U.S. Department of Labor, Bureau of Labor Statistics, National Longitudinal Survey of Youth, 1996–97.

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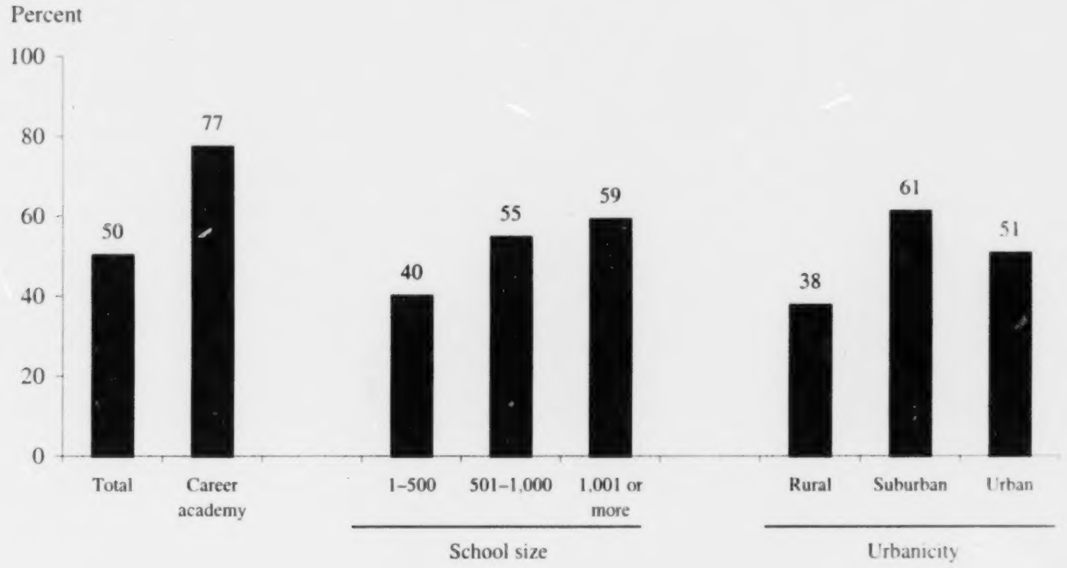
[67] The national tech-prep evaluation conducted by Mathematica found that by fall 1995, more than 1,000 education consortia in the country—encompassing about 70 percent of U.S. school districts serving about 90 percent of all high school students—offered tech prep. This finding is not incompatible with the above finding that 50 percent of public high schools offered tech prep. The national tech-prep evaluation surveyed state-level tech prep coordinators and local tech-prep consortium coordinators, rather than high school administrators, who represented the survey universe for the 1997 findings presented in this report. It is possible for a local education consortium to offer tech prep, but not all of the high schools in the school districts participating in that consortium do so. See A. Hershey et al., *Focus for the Future: The Final Report of the National Tech-Prep Evaluation* (Princeton, NJ: Mathematica Policy Research, 1998), p. xv.

Figure 20—Percentage of public schools offering tech-prep education, by selected school characteristics: 1997



NOTE: The sample is made up of public schools with a 12th grade. Schools that were identified by school district officials as primarily vocational in nature were not included in the sampling frame.

SOURCE: U.S. Department of Labor, Bureau of Labor Statistics, National Longitudinal Survey of Youth, 1996–97.

- Thirty-nine percent of public high schools reported offering some form of block scheduling that allows for longer class periods (table 40; figure 21). About one in five public high schools offered career majors or school-based enterprises to their students.

- Among public high schools, 28 percent reported having skill standards, 20 percent reported offering skill certificates, and 20 percent occupational certificates (table 41). Large schools and urban schools were more likely than small and rural schools to offer these types of standards and certificates. Also, schools with higher percentages of minority students were more likely to have skill certificates and standards. For example, 51 percent of high-minority schools (those with more than 75 percent minority students) had skill standards.

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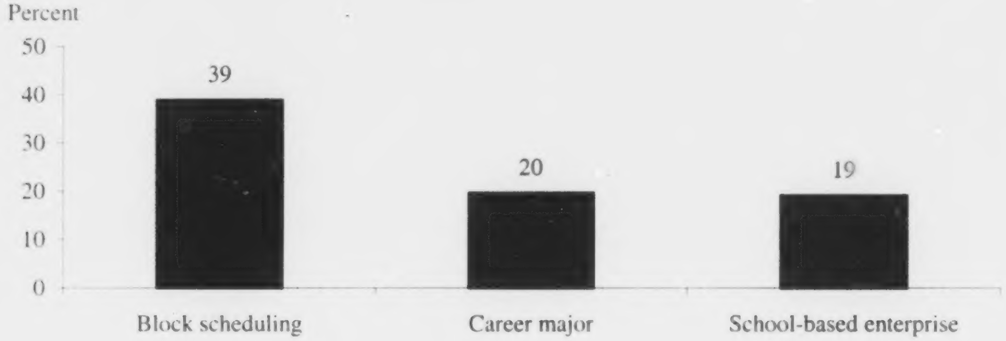
Table 40—Percentage of public schools offering various school-based activities, by selected characteristics: 1997

	Block scheduling	Career major	School-based enterprise
Total	38.9	19.6	19.1
Student enrollment			
1–500	32.7	12.5	14.3
501–1,000	39.9	19.2	15.5
1,001 or more	46.5	29.8	29.2
Urbanicity			
Urban	48.0	25.8	24.7
Suburban	44.1	25.1	25.4
Rural	29.8	12.7	9.2
Career academy			
Yes	64.2	71.5	50.8
No	39.7	19.4	19.1
Region			
Northeast	35.2	20.8	23.1
Midwest	35.6	14.3	22.0
West	41.0	17.5	23.4
South	39.2	26.3	13.5

NOTE: The sample is made up of public schools with a 12th grade. Schools that were identified by school district officials as primarily vocational in nature were not included in the sampling frame.

SOURCE: U.S. Department of Labor, Bureau of Labor Statistics, National Longitudinal Survey of Youth, 1996–97.

Figure 21—Percentage of public schools offering various school-based activities: 1997



NOTE: The sample is made up of public schools with a 12th grade. Schools that were identified by school district officials as primarily vocational in nature were not included in the sampling frame.

SOURCE: U.S. Department of Labor, Bureau of Labor Statistics, National Longitudinal Survey of Youth, 1996–97.

Table 41—Percentage of public schools offering skill standards, skill certificates, and occupational certificates, by selected school characteristics: 1997

Selected school characteristics	Skill standards	Skill certificates	Occupational certificates
Total	27.5	19.9	19.7
Region			
Northeast	29.3	20.8	19.2
Midwest	27.6	20.5	22.2
West	30.4	25.2	16.5
South	27.3	17.1	21.7
Public school type			
Comprehensive public	27.9	20.4	19.1
Public choice	15.0	12.8	19.4
Public magnet	30.2	22.3	15.2
Other public	24.9	13.1	21.2
Percent minority students			
0–25	24.3	16.6	17.9
26–50	34.4	25.6	25.1
51–75	26.2	21.4	19.8
76–100	51.1	42.3	29.6
Grade span			
K–12	30.1	8.9	11.5
7–12	14.1	11.0	9.0
9–12	29.2	22.0	21.2
10–12	28.7	22.7	35.0
Percent taking SAT or ACT			
0–25	30.3	22.2	20.9
26–50	28.2	18.3	18.4
51–75	27.9	26.7	21.3
76–100	24.9	9.5	17.8
Student enrollment			
1–500	15.8	9.4	7.2
501–1,000	26.0	17.8	20.3
1,001 or more	44.6	35.7	35.8
Urbanicity			
Urban	41.4	31.6	33.6
Suburban	34.1	26.8	23.4
Rural	15.3	7.9	10.5
Career academy			
Yes	60.8	54.3	53.9
No	26.4	18.7	18.6

NOTE: The sample is made up of public schools with a 12th grade. Schools that were identified by school district officials as primarily vocational in nature were not included in the sampling frame.

SOURCE: U.S. Department of Labor, Bureau of Labor Statistics, National Longitudinal Survey of Youth, 1996–97.

WORK EXPERIENCE AND WORK-BASED LEARNING

Most public high school graduates work during their senior year of high school, although most of these students work part time.[68] In addition to student-found employment, many schools offer work-based learning experiences, with cooperative education being the most common form of work-based learning, followed by job shadowing, internships, and mentoring. Although participation in occupational education decreased between 1982 and 1994, the percentage of public high school graduates earning cooperative education credits increased somewhat over the same time period.[69] By 1994, about one in ten graduates participated in cooperative education.

- Most 1992 public high school graduates (71 percent) worked during their senior year of high school (table 42). Of these, most worked 20 or fewer hours per week. While vocational concentrators were only slightly more likely than college preparatory and other/general students to work during their senior year, they were significantly more likely than these two groups to work more than 20 hours per week.[70]

Table 42—Percentage distribution of 1992 public high school graduates according to their work status during their senior year in high school, by curriculum specialization in high school

			Hours worked	
Curriculum specialization	Never worked	Any work	20 or fewer hours	More than 20 hours
Total	29.2	70.8	67.7	32.3
College preparatory only	31.8	68.2	79.9	20.1
Vocational concentrators total*	25.3	74.7	55.8	44.2
Vocational concentration only	24.5	75.5	53.8	46.3
Both vocational concentration and college preparatory	29.5	70.5	68.6	31.4
Other/general	29.6	70.4	66.4	33.6

*Includes students who completed both a vocational concentration and a college preparatory curriculum.

NOTE: Percentages may not add to 100 due to rounding.

SOURCE: U.S. Department of Education, National Center for Education Statistics, National Education Longitudinal Study of 1988, Second Follow-up and High School Transcript Study.

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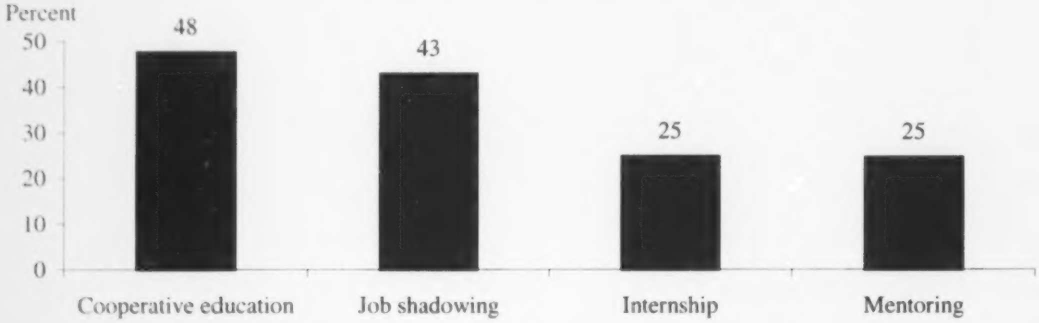
[68] Some of this student-reported employment may include school-organized work experiences.

[69] In this section, cooperative education describes programs that allow students to earn school credit for paid or unpaid employment that is related to a specific occupational program of study. In contrast, general work experience is not connected to a specific occupational program.

[70] The difference in overall work rates for vocational concentrators and other/general students was not statistically significant.

- Between 25 and 50 percent of public high schools offered each type of work-based learning activity in 1997 (figure 22). Cooperative education and job shadowing were more prevalent than mentoring or internships, with 48 and 43 percent of public schools offering cooperative education and job shadowing, respectively, and 25 percent of public schools offering mentoring and 25 percent internships.

Figure 22—Percentage of public schools offering various work-based activities: 1997



NOTE: The sample is made up of public schools with a 12th grade. Schools that were identified by school district officials as primarily vocational in nature were not included in the sampling frame.

SOURCE: U.S. Department of Labor, Bureau of Labor Statistics, National Longitudinal Survey of Youth, 1996–97.

- The percentage of public high school graduates taking cooperative education courses increased from 8.0 percent in 1982 to 9.4 percent in 1994 (table 43). Given that the average number of specific occupational credits earned by graduates decreased over the same period, this means that the share of occupationally specific credits that were cooperative education credits increased, from 3.5 percent in 1982 to 4.5 percent in 1994 (table 44).

- Vocational concentrators exhibited the highest rates of participation in cooperative education courses in all the years studied (tables 43 and 44). Twenty-three percent of vocational concentrators earned credits in this area in 1994, compared with 3 percent of college preparatory students and 6 percent of students completing general coursework in high school. Similarly, vocational concentrators earned a greater share of their specific occupational credits in cooperative education coursework than did college preparatory or other/general students in 1994.

Table 43—Percentage of public high school graduates completing cooperative education or work experience coursework in a specific occupational area, by curriculum specialization in high school: 1982, 1990, and 1994

Curriculum specialization	1982	1990	1994
Total	8.0	7.4	9.4
Vocational concentrators total*	14.9	17.6	23.1
Vocational concentration only	15.0	17.9	23.8
Both vocational concentration and college preparatory	8.0	15.4	20.4
College preparatory	0.1	1.6	3.0
Other/general	5.1	4.4	6.0

*Includes students who completed both a vocational concentration and a college preparatory curriculum.

SOURCE: U.S. Department of Education, National Center for Education Statistics, High School and Beyond Sophomore Cohort 1982 High School Transcript Study and 1990 and 1994 National Assessment of Educational Progress High School Transcript Studies.

Table 44—Average percentage of specific labor market preparation (SLMP) credits earned through cooperative education or work experience coursework in a specific occupational area, by curriculum specialization in high school: 1982, 1990, and 1994

Curriculum specialization	1982	1990	1994
Total	3.5	3.2	4.5
Vocational concentrators total*	5.8	7.8	11.4
Vocational concentration only	5.8	7.8	11.5
Both vocational concentration and college preparatory	4.0	8.5	10.9
College preparatory	0.1	0.8	1.4
Other/general	2.4	1.8	2.7

*Includes students who completed both a vocational concentration and a college preparatory curriculum.

SOURCE: U.S. Department of Education, National Center for Education Statistics, High School and Beyond Sophomore Cohort 1982 High School Transcript Study and 1990 and 1994 National Assessment of Educational Progress High School Transcript Studies.

- Both vocational concentrators and college preparatory students increased their cooperative education coursetaking between 1982 and 1994 (tables 43 and 44). While 15 percent of vocational concentrators completed cooperative education courses in 1982, 23 percent did so in 1994. Course completion rates for college preparatory students increased from less than 1 percent in 1982 to 3 percent in 1994. Both groups also increased their share of specific occupational credits earned in cooperative education coursework over the years studied. However, vocational concentrators increased their absolute and relative participation in cooperative education at a faster rate than did college preparatory students.

- In 1994, graduates earned more cooperative education credits in business and in marketing and distribution than in other program areas (table 45). The average number of cooperative education credits earned in these program areas remained relatively unchanged from 1982.

- The percentage of all graduates completing career preparation and general work experience courses that were not associated with a specific occupational program decreased from 17 to 13 percent between 1982 and 1994 (table 46).

TECHNOLOGY LITERACY

The percentage of public high school graduates taking at least one computer education course increased substantially between 1982 and 1990, and then remained relatively steady through 1994. In that year, about 80 percent of graduates had completed at least one semester of computer education. Participation in the more traditional "industrial arts" declined over the 1982–1994 period, while participation in the newer "technology education" increased. However, it is not possible to determine from the available data the extent to which this shift reflects relabeling, rather than a change in course objectives or content. In 1994, fewer graduates completed coursework in the combined introductory technology fields than in 1982.

- The percentage of public high school graduates who completed at least one semester of computer education increased sixfold from 13 percent in 1982 to 78 percent in 1990, and then remained relatively constant between 1990 and 1994 (table 47).[71]

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[71] In 1990, the definition of computer education in the survey was expanded to include former "typewriting" courses, since these were increasingly becoming "computer keyboarding" courses.

Table 45—Average number of Carnegie units accumulated by public high school graduates in cooperative education and work experience coursework in a specific occupational area: 1982, 1990, and 1994

Curriculum specialization	Total	Agri- culture and renewable resources	Business	Marketing and distri- bution	Health care	Public and protective services	Trade and industry	Tech- nology and communi- cations	Personal and other services	Food service and hospitality	Child care and education	Occu- pational home economics[1]
1982												
Total	0.15	0.01	0.07	0.04	0.01	0.00	0.01	0.00	0.00	0.01	0.00	0.01
Vocational concentrators total[2]	0.34	0.02	0.17	0.09	0.02	0.00	0.03	0.00	0.00	0.01	0.00	0.01
Vocational concentration only	0.34	0.02	0.17	0.09	0.02	0.00	0.03	0.00	0.00	0.01	0.00	0.01
Both vocational concentration and college preparatory	0.16	0.00	0.08	0.08	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
College preparatory	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Other/general	0.06	0.00	0.02	0.02	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.01
1990												
Total	0.15	0.01	0.05	0.04	0.01	0.00	0.03	0.00	0.01	0.00	0.00	0.02
Vocational concentrators total[2]	0.45	0.04	0.14	0.10	0.02	0.00	0.11	0.00	0.04	0.00	0.01	0.05
Vocational concentration only	0.46	0.05	0.13	0.10	0.02	0.00	0.11	0.00	0.04	0.00	0.01	0.05
Both vocational concentration and college preparatory	0.40	0.00	0.22	0.08	0.03	0.00	0.03	0.00	0.03	0.00	0.00	0.03
College preparatory	0.02	0.00	0.01	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Other/general	0.05	0.00	0.02	0.02	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00
1994												
Total	0.21	0.01	0.06	0.06	0.02	0.00	0.03	0.00	0.02	0.01	0.01	0.03
Vocational concentrators total[2]	0.64	0.05	0.19	0.17	0.05	0.00	0.11	0.00	0.05	0.01	0.02	0.08
Vocational concentration only	0.67	0.06	0.19	0.19	0.03	0.00	0.12	0.00	0.05	0.02	0.02	0.08
Both vocational concentration and college preparatory	0.51	0.02	0.22	0.11	0.07	0.00	0.04	0.00	0.04	0.00	0.01	0.05
College preparatory	0.03	0.00	0.01	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01
Other/general	0.08	0.00	0.02	0.03	0.00	0.00	0.01	0.00	0.01	0.00	0.00	0.01

[1] Occupational home economics combines personal and other services, food service and hospitality, and child care and education.

[2] Includes students who completed both a vocational concentration and a college preparatory curriculum.

NOTE: Averages may not add to totals due to rounding. Estimates appearing as 0.00 may be nonzero but less than 0.005.

SOURCE: U.S. Department of Education, National Center for Education Statistics, High School and Beyond Sophomore Cohort 1982 High School Transcript Study and 1990 and 1994 National Assessment of Educational Progress High School Transcript Studies.

Table 46—Percentage of graduates completing career preparation and general work experience courses not in a specific occupational area, by curriculum specialization in high school: 1982, 1990, and 1994

Curriculum specialization	1982	1990	1994
Total	17.1	17.6	13.3
Vocational concentrators total*	15.5	17.3	14.3
Vocational concentration only	15.6	17.8	15.3
Both vocational concentration and college preparatory	6.5	12.8	9.7
College preparatory	5.2	9.8	7.7
Other/general	19.6	22.0	16.9

*Includes students who completed both a vocational concentration and a college preparatory curriculum.

SOURCE: U.S. Department of Education, National Center for Education Statistics, High School and Beyond Sophomore Cohort 1982 High School Transcript Study and 1990 and 1994 National Assessment of Educational Progress High School Transcript Studies.

Table 47—Percentage of public high school graduates completing at least .5 credits of computer education coursework: 1982, 1990, and 1994

Year	1982	1990*	1994
Total	13.2	78.4	79.9
Gender			
Male	14.0	70.5	75.1
Female	12.5	85.5	84.5
Race–ethnicity			
American Indian/Alaskan Native	6.1	74.7	75.1
Asian/Pacific Islander	18.1	74.8	78.5
Black, non-Hispanic	12.8	78.3	77.9
Hispanic	8.0	79.2	80.5
White, non-Hispanic	14.2	78.7	80.7

*In 1990, the definition of computer education in the survey was expanded to include former "typewriting" courses, since these were increasingly becoming "computer keyboarding" courses.

SOURCE: U.S. Department of Education, National Center for Education Statistics, High School and Beyond Sophomore Cohort 1982 High School Transcript Study and 1990 and 1994 National Assessment of Educational Progress High School Transcript Studies.

- Although male and female graduates completed computer education coursework at similar rates in 1982, females were more likely than males to take such coursework in later years (table 47). In 1994, 85 percent of female graduates versus 75 percent of male graduates took at least one semester of computer education. By contrast, earlier differences among racial–ethnic groups in completing computer coursework disappeared in later years. In 1982, American Indians/Alaskan Natives and Hispanics were less likely than other racial–ethnic groups to take at least one semester of computer education.[72] In 1990 and 1994, however, all race–ethnicities completed computer education coursework at similar rates. For example, in 1994, between 75 and 81 percent of students in the different racial–ethnic groups completed at least one semester of computer education.[73]

- The percentage of public high school graduates completing at least one course in technology education jumped between 1990 and 1994, from 0.8 percent to 4.2 percent (table 48). The percentage in 1982 was 0.2. Over the same period, the percentage of graduates completing at least one course in industrial arts declined from 14 percent in 1982 to 8 percent in 1994. Combining the more traditional industrial arts with the newer technology education, fewer graduates completed coursework in introductory technology fields in 1994 than in 1982.[74]
- Female public high school graduates were less likely than their male peers to complete introductory technology coursework in all years studied (table 48). In 1994, 3 percent of female graduates versus 20 percent of male graduates completed introductory technology coursework. In the same year, Asian/Pacific Islander graduates were less likely than white and black graduates to complete introductory technology coursework.

VOCATIONAL TEACHERS

The available teacher trend data were for school years 1990–91 and 1993–94, and the changes noted were generally small for the 3-year period. However, these changes included a teaching force that grew older and accrued more years of teaching experience. This trend held for vocational and academic teachers alike.

Vocational and academic teachers were similar in a number of ways: about the same proportions held bachelor's degrees, and similar percentages held either standard or advanced certification. However, about 8 percent of vocational teachers had less than a bachelor's degree, in comparison with less than 1 percent of academic teachers. Also, vocational teachers were generally older than academic teachers, which may be due to the fact that vocational teachers entered the teaching profession at an older age, possibly after obtaining industry experience. There were

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[72] The difference in course completion rates between American Indians/Alaskan Natives and blacks in 1982 was not statistically significant.

[73] These differences were not statistically significant.

[74] It is not possible to determine from the available data the extent to which the shift from industrial arts to technology education represents relabeling versus a change in course content or objectives.

Table 48—Percentage of public high school graduates completing introductory technology coursework, by type of course: 1982, 1990, and 1994

	Introductory technology		
Year	Total	Industrial arts	Technology education
1982	14.1	14.0	0.2
Gender			
Male	24.7	24.5	0.4
Female	4.3	4.2	0.1
Race–ethnicity			
American Indian/Alaskan Native	25.2	24.6	1.5
Asian/Pacific Islander	11.2	11.2	0.0
Black, non-Hispanic	11.4	11.1	0.3
Hispanic	20.0	19.9	0.2
White, non-Hispanic	13.6	13.5	0.2
1990	9.6	9.0	0.8
Gender			
Male	16.8	15.7	1.5
Female	3.1	2.9	0.1
Race–ethnicity			
American Indian/Alaskan Native	11.0	9.9	1.0
Asian/Pacific Islander	6.8	6.7	0.1
Black, non-Hispanic	9.6	8.9	0.7
Hispanic	7.3	6.8	0.5
White, non-Hispanic	9.9	9.3	0.8
1994	11.3	7.9	4.2
Gender			
Male	19.9	13.8	7.4
Female	3.1	2.1	1.0
Race–ethnicity			
American Indian/Alaska Native	15.6	11.0	4.6
Asian/Pacific Islander	5.6	4.3	1.6
Black, non-Hispanic	11.1	6.8	4.6
Hispanic	9.0	5.7	3.7
White, non-Hispanic	12.0	8.5	4.2

SOURCE: U.S. Department of Education, National Center for Education Statistics, High School and Beyond Sophomore Cohort 1982 High School Transcript Study and 1990 and 1994 National Assessment of Educational Progress High School Transcript Studies.

some variations among vocational teachers who taught in different program areas and school settings. For example, trade and industry and technical teachers and those teaching in more than one vocational field were generally least likely to have a bachelor's or advanced degree than other vocational teachers.

Qualifications and Experience

- The educational attainment of vocational teachers as a group remained about the same in 1990–91 and 1993–94 (table 49). Although there was a small decrease in the percentage of teachers with a master's degree, the percentage of vocational teachers with a doctorate or first-professional degree increased slightly.[75] In both 1990–91 and 1993–94, about 8 percent of vocational teachers had less than a bachelor's degree; 47 percent had a bachelor's degree; and the rest (about 45–46 percent) had some type of advanced degree.

- About the same proportion (47 percent) of vocational and academic teachers held bachelor's degrees as their highest degree in 1993–94 (table 49; figure 23). Vocational teachers were more likely to have less than a bachelor's degree (8.3 versus 0.5 percent), while academic teachers were more likely to have a master's or doctorate/first-professional degree.

- Educational attainment varied markedly by vocational program area. Trade and industry and technical teachers and those teaching in more than one vocational field were generally least likely to have a bachelor's or advanced degree in 1993–94 (table 49). About 39 percent of trade and industry teachers, 32 percent of "mixed" vocational teachers, and 16 percent of technical teachers held less than a bachelor's degree.[76] This may reflect the practice in some states of counting industry experience in place of education in hiring some vocational teachers.[77] In contrast, agriculture, business, career education, home economics, and industrial arts teachers were more like academic teachers in terms of their educational attainment, with less than 6 percent of these groups having less than a bachelor's degree.[78]

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[75] The changes in the percentages of vocational teachers with bachelor's and education specialist degrees were not statistically significant.

[76] The only exceptions were that technical teachers were not statistically different from career education, health, and "other" vocational teachers, and "mixed" vocational teachers were not statistically different from health teachers.

[77] See "The State of Certification," *Vocational Education Journal* 68 (6) (September 1993): 30–35.

[78] Health teachers were statistically different from trade and industry teachers, and "other" vocational teachers were statistically different from both trade and industry and "mixed" vocational teachers. "Other" vocational teachers were not statistically different from academic teachers.

Table 49—Percentage distribution of public school teachers of grades 9 through 12 according to highest educational degree, by teaching assignment and vocational program area: 1990–91 and 1993–94

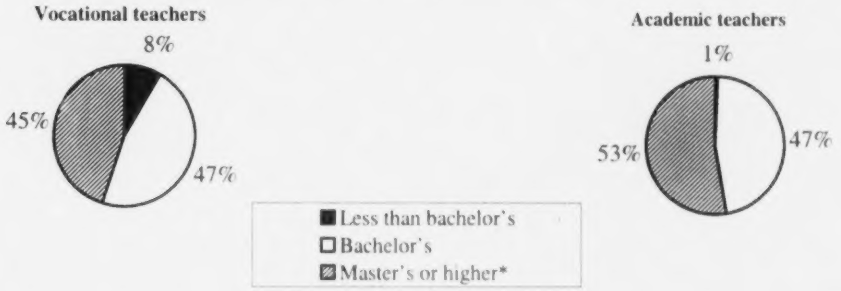
Teaching assignment and vocational program area	1990–91					1993–94				
	Less than bachelor's	Bachelor's	Master's	Educational specialist	Doctorate or first-professional	Less than bachelor's	Bachelor's	Master's	Educational specialist	Doctorate or first-professional
Total	1.7	45.4	46.4	5.3	1.3	1.7	46.3	45.6	5.3	1.1
Teaching assignment										
Vocational education	8.3	45.5	41.4	4.5	0.3	8.3	46.7	38.7	5.6	0.7
Academic education	0.3	45.7	47.4	5.1	1.5	0.5	46.8	46.6	4.9	1.2
Special education	0.2	42.5	47.0	8.4	1.9	0.2	41.3	49.4	8.2	0.9
Vocational program area										
Agriculture	1.5	51.3	42.7	3.9	0.6	1.7	51.9	42.7	2.5	1.2
Business and accounting	0.6	43.1	50.4	5.6	0.3	0.7	48.2	44.5	6.5	0.1
Career education	0.5	42.7	47.5	9.2	0.0	5.5	39.1	42.1	10.6	2.7
Health occupations	17.9	44.4	26.1	11.6	0.0	15.1	49.5	20.4	15.0	0.0
Home economics	0.3	58.8	37.9	2.7	0.4	0.1	59.2	36.3	3.4	1.0
Industrial arts	4.0	46.9	44.8	4.3	0.0	2.4	45.7	45.2	5.1	1.6
Technical	24.7	39.0	33.1	3.2	0.0	16.0	46.3	34.3	0.9	2.5
Trade and industry	45.4	29.3	21.8	3.3	0.2	39.1	29.5	24.6	6.6	0.2
Other	18.1	43.4	32.2	4.8	1.6	12.5	40.0	41.0	6.4	0.1
Mixed*	2.9	41.8	51.7	3.6	0.0	32.2	34.8	25.0	7.1	0.9

*"Mixed" indicates that the teacher taught equal proportions in two or more vocational subjects.

NOTE: Percentages may not add to 100 due to rounding. Estimates appearing as 0.0 may be nonzero but less than 0.05.

SOURCE: U.S. Department of Education, National Center for Education Statistics, Schools and Staffing Survey, 1990–91 and 1993–94.

Figure 23—Percentage distribution of public school teachers of grades 9 through 12 according to highest educational degree, by teaching assignment: 1993–94



*Includes master's, educational specialist, doctoral degree, or first-professional degree.

NOTE: Percentages may not add to 100 due to rounding.

SOURCE: U.S. Department of Education, National Center for Education Statistics, Schools and Staffing Survey, 1993–94.

- Between the 1990–91 and 1993–94 school years, the percentage of vocational teachers whose highest degree was in the broad field of vocational education decreased slightly (by about 3 percent), while the percentage who had an occupationally specific degree increased by about the same amount (table 50). More than half (57 percent) of vocational teachers in 1993–94 held their highest degree in vocational education, while approximately equal percentages of vocational teachers (12–13 percent) held degrees in the specific occupational and general education fields.

Table 50—Percentage distribution of public school teachers of grades 9 through 12 according to major field of highest degree, by teaching assignment: 1990–91 and 1993–94

Teaching assignment	Math and science	Social science	Letters and humanities	General education	Special education	Vocational education	Occupationally specific	Other
				1990–91				
Total	7.0	5.8	9.9	41.6	6.6	11.3	3.7	14.1
Vocational education	0.7	1.3	1.1	13.0	0.9	59.7	9.0	14.2
Academic education	9.3	6.9	12.8	50.7	1.2	1.7	2.9	14.4
Special education	0.8	4.8	2.3	21.4	54.2	3.6	1.4	11.4
				1993–94				
Total	8.2	5.4	10.4	41.1	6.3	10.0	4.3	14.3
Vocational education	0.7	1.0	1.2	12.9	1.0	56.8	11.5	14.8
Academic education	10.5	6.3	13.2	48.8	1.1	2.1	3.3	14.6
Special education	0.8	4.7	1.6	21.4	55.9	2.6	2.2	10.9

NOTE: Percentages may not add to 100 due to rounding.

SOURCE: U.S. Department of Education, National Center for Education Statistics, Schools and Staffing Survey, 1990–91 and 1993–94.

- In 1993–94, vocational teachers as a group had accrued more years of teaching experience than in 1990–91 (table 51). In particular, the percentage of vocational teachers with 10–20 years of teaching experience decreased, while the percentage with more than 20 years of teaching experience increased.[79] A similar trend was evident for academic teachers.[80] About the same percentage of vocational and academic teachers (37 percent) had taught for more than 20 years by 1993–94.

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[79] The percentages of vocational teachers with less than 3 years of experience and 3–9 years of experience remained about the same between 1990–91 and 1993–94.

[80] Unlike the increase in the percentage of vocational teachers with less than 3 years of teaching experience, which was not statistically significant, the increase for academic teachers in this experience group was significant.

Table 51—Percentage distribution of public school teachers of grades 9 through 12 according to years of teaching experience, by teaching assignment: 1990–91 and 1993–94

Teaching assignment	1990–91				1993–94			
	Less than 3 years	3–9 years	10–20 years	More than 20 years	Less than 3 years	3–9 years	10–20 years	More than 20 years
Total	6.1	21.4	40.9	31.6	7.8	21.8	34.6	35.8
Vocational education	5.1	20.5	42.5	31.9	5.9	19.7	37.4	37.1
Academic education	6.3	20.5	39.6	33.6	8.4	21.6	32.6	37.4
Special education	7.0	29.4	47.3	16.3	6.8	26.7	46.4	20.1

NOTE: Percentages may not add to 100 due to rounding.

SOURCE: U.S. Department of Education, National Center for Education Statistics, Schools and Staffing Survey, 1990–91 and 1993–94.

- In 1993–94, about three-quarters (75 percent) of vocational teachers had a standard teaching credential, and an additional 17 percent had advanced certification (table 52). About 9 percent of vocational teachers—the same proportion as academic teachers—were teaching either without a credential or with a probationary, temporary, provisional, emergency, or alternative certificate.[81]

Table 52—Percentage distribution of public school teachers of grades 9 through 12 according to type of credential in primary assignment field, by teaching assignment: 1990–91 and 1993–94

Teaching assignment	None	Standard	Probationary	Temporary[1]	Alternative[2]	Advanced[2]	Other[2]
				1990–91			
Total	2.2	76.3	2.6	3.1	—	—	15.9
Vocational education	1.0	77.4	2.1	3.9	—	—	15.7
Academic education	2.3	76.6	2.6	2.8	—	—	15.7
Special education	3.7	72.0	2.7	4.5	—	—	17.1
				1993–94			
Total	2.7	74.6	1.6	3.9	1.0	16.1	—
Vocational education	1.2	74.6	0.8	4.7	2.0	16.7	—
Academic education	2.9	75.2	1.8	3.4	0.8	16.0	—
Special education	3.6	70.1	1.7	6.9	1.3	16.4	—

—Not applicable.

[1] In 1993–94, the "temporary" category also included "provisional" and "emergency" credentials.

[2] In 1993–94, rather than including an "other" category, the survey asked about "alternative" and "advanced" credentials.

NOTE: Percentages may not add to 100 due to rounding.

SOURCE: U.S. Department of Education, National Center for Education Statistics, Schools and Staffing Survey, 1990–91 and 1993–94.

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[81] The certification categories were changed between 1990–91 and 1993–94, making it difficult to compare certification patterns between the two years.

Demographic Characteristics

- As might be expected, in addition to gaining more years of teaching experience, the teaching force aged somewhat between 1990–91 and 1993–94 (table 53). Specifically, while 62 percent of all teachers were age 40 or over in 1990–91, 69 percent were in this age group in 1993–94. This aging trend held for both vocational and academic teachers.
- In both school years surveyed, vocational teachers were generally older than academic teachers; however, as mentioned previously, they had similar years of teaching experience (table 53; figure 24). Vocational teachers may have been older than their academic peers because they began teaching at an older age, possibly after obtaining industry experience, or because they alternated teaching spells with other experiences.

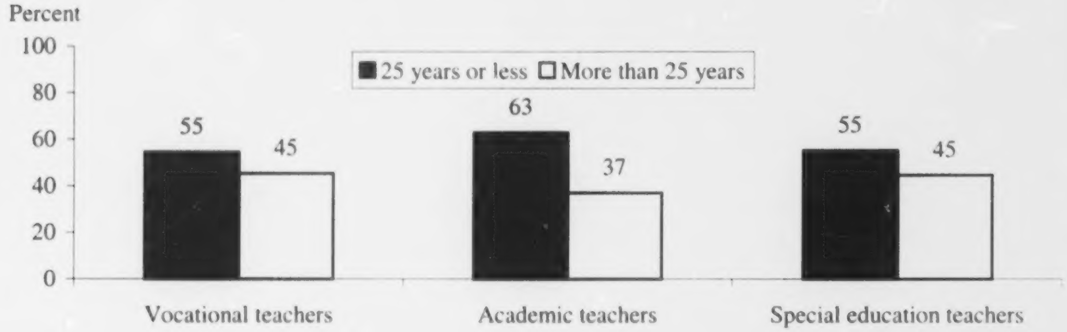
Table 53—Percentage distribution of public school teachers of grades 9 through 12 according to age in current school year and age when began teaching, by teaching assignment: 1990–91 and 1993–94

	Age in current year				Age began teaching				
Teaching assignment	Less than 30 years	30–39 years	40–49 years	50 years or more	25 years or less	26–35 years	36–45 years	46–55 years	More than 55 years
					1990–91				
Total	11.0	26.9	41.1	21.0	69.8	22.9	6.0	1.1	0.1
Vocational education	8.4	24.8	39.6	27.2	62.6	25.4	9.9	1.9	0.3
Academic education	11.5	26.1	42.1	20.3	72.2	21.9	5.0	0.8	0.1
Special education	12.2	36.0	36.2	15.6	64.8	26.0	7.1	2.0	0.1
					1993–94				
Total	9.8	21.6	40.8	27.8	61.0	29.7	7.6	1.5	0.2
Vocational education	6.2	19.8	41.5	32.6	54.6	31.8	11.0	2.4	0.2
Academic education	10.6	21.3	40.7	27.5	63.0	29.1	6.5	1.3	0.1
Special education	8.9	27.8	40.7	22.6	55.3	31.1	10.8	2.3	0.4

NOTE: Percentages may not add to 100 due to rounding.

SOURCE: U.S. Department of Education, National Center for Education Statistics, Schools and Staffing Survey, 1990–91 and 1993–94.

Figure 24—Percentage distribution of public school teachers of grades 9 through 12 according to age when began teaching, by teaching assignment: 1993–94



SOURCE: U.S. Department of Education, National Center for Education Statistics, Schools and Staffing Survey, 1993–94.

- About half of academic and vocational teachers were male, and half female (table 54). This was true in both 1990–91 and 1993–94, with no significant change in the gender ratio between the 2 years. In both years, the percentage of vocational teachers who were black was greater than the percentage of academic teachers who were black (table 55). However, the percentage of vocational teachers who were black decreased slightly over the 3-year period.[82]

Table 54—Percentage distribution of public school teachers of grades 9 through 12 according to sex, by teaching assignment: 1990–91 and 1993–94

	1990–91		1993–94	
Teaching assignment	Male	Female	Male	Female
Total	48.6	51.4	48.4	51.6
Vocational education	51.7	48.3	52.1	47.9
Academic education	50.8	49.2	50.1	49.9
Special education	28.3	71.7	27.7	72.3

NOTE: Percentages may not add to 100 due to rounding.

SOURCE: U.S. Department of Education, National Center for Education Statistics, Schools and Staffing Survey, 1990–91 and 1993–94.

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[82] Vocational teachers were slightly less likely than academic teachers to be Hispanic in 1990–91, although this difference was not significant in 1993–94.

Table 55—Percentage distribution of public school teachers of grades 9 through 12 according to race–ethnicity, by teaching assignment: 1990–91 and 1993–94

	1990–91					1993–94				
Teaching assignment	White, non-Hispanic	Black, non-Hispanic	Hispanic	Asian/ Pacific Islander	American Indian/ Alaskan Native	White, non-Hispanic	Black, non-Hispanic	Hispanic	Asian/ Pacific Islander	American Indian/ Alaskan Native
Total	89.1	6.6	2.8	0.8	0.7	89.1	5.8	3.4	0.9	0.7
Vocational education	87.8	8.7	2.0	0.7	0.9	88.7	7.2	2.6	0.8	0.7
Academic education	89.6	5.8	3.1	0.9	0.6	89.4	5.3	3.6	0.9	0.7
Special education	88.3	8.4	1.7	0.7	0.9	87.4	7.7	3.1	0.8	1.0

NOTE: Percentages may not add to 100 due to rounding.

SOURCE: U.S. Department of Education, National Center for Education Statistics, Schools and Staffing Survey, 1990–91 and 1993–94.

Professional Development Activities

Most teachers—vocational, academic, and special education alike—reported participating in some professional development activity during 1993–94. The professional development activities surveyed included district- and school-sponsored workshops or inservices, postsecondary coursework, professional association activities, and participation in various teaching-related committees. Vocational teachers were generally more likely than other teachers to seek professional development opportunities outside their school or district. This was particularly true for vocational teachers in a vocational school setting. This suggests that schools and districts, particularly vocational schools and the districts that oversee them, may be somewhat less successful at providing their vocational teachers with relevant professional development activities. Alternatively, it may be that these schools and districts offer fewer vocationally relevant activities directly, relying more on outside professional development providers.

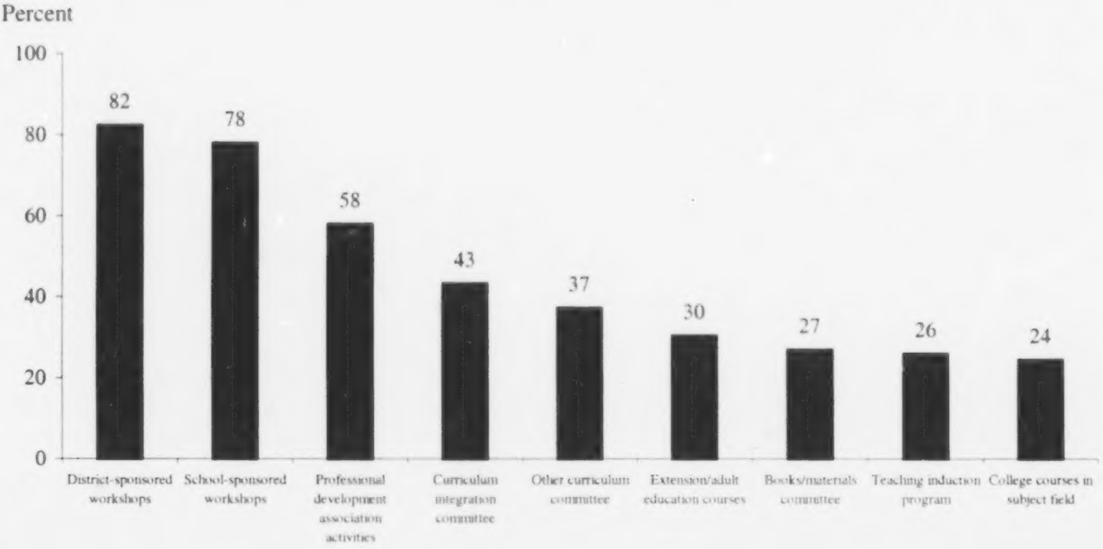
- Most teachers (96 percent) reported participating in at least one type of professional development activity in 1993–94 (table 56; figure 25). This was true for both vocational and academic teachers. However, vocational teachers were twice as likely as other teachers to participate on a curriculum integration committee, and were more likely to participate in professional association activities and take adult education courses. Vocational teachers were slightly less likely than other teachers to participate in district-sponsored workshops.

Table 56—Percentage of public school teachers of grades 9 through 12 who reported participating in various professional development activities, by teaching assignment and vocational teachers by school type: 1993–94

			Professional development activities								
Teaching assignment and vocational teachers by school type	None	All	Teaching induction program	District-sponsored workshops	School-sponsored workshops	Extension/adult education courses	College courses in subject field	Professional development association activities	Curriculum integration committee	Other curriculum committee	Books/materials committee
Total	3.8	1.9	25.9	84.2	78.4	25.6	24.4	52.2	23.6	38.6	29.6
Teaching assignment											
Vocational education	3.6	2.9	25.9	82.3	77.9	30.4	24.4	57.9	43.2	37.2	26.9
Academic education	3.9	1.8	25.8	84.3	78.1	24.7	23.8	51.5	19.4	40.2	32.1
Special education	2.9	1.4	26.0	86.3	81.9	25.0	28.8	47.9	24.6	28.5	14.1
Vocational teachers by school type											
Comprehensive high school	3.6	2.8	24.4	83.8	77.9	29.2	24.1	57.8	43.0	37.6	27.4
Vocational high school	3.4	2.7	36.0	69.2	76.2	41.2	27.7	58.1	43.7	33.9	24.5
Other	4.6	5.1	34.1	81.3	82.1	31.6	24.1	59.3	45.9	36.9	22.2

SOURCE: U.S. Department of Education, National Center for Education Statistics, Schools and Staffing Survey, 1993–94.

Figure 25—Percentage of public school vocational teachers of grades 9 through 12 who reported participating in various professional development activities: 1993–94



SOURCE: U.S. Department of Education, National Center for Education Statistics, Schools and Staffing Survey, 1993–94.

- Most teachers (85 percent) participated in at least one type of inservice activity in 1993–94 (table 57). The activities surveyed included the following topics: educational technology, student assessment, cooperative learning, various methods of teaching in one's subject field, and an in-depth study in that subject field. Vocational teachers were more likely than other teachers to participate in workshops on the uses of educational technology and to report participating in an in-depth study in their subject field.[83] However, vocational teachers were less likely than other teachers to participate in workshops on methods of teaching in their subject field.

Table 57—Percentage of public school teachers of grades 9 through 12 who reported participating in inservice/professional development activities focusing on various topics, by teaching assignment and vocational teachers by school type: 1993–94

			Inservice/professional development activities				
Teaching assignment and vocational teachers by school type	None	All	Uses of educational technology	Methods of teaching in subject field	In-depth study in subject field	Student assessment	Cooperative learning in class
Total	14.5	8.6	51.1	54.2	27.4	45.0	48.1
Teaching assignment							
Vocational education	14.4	10.5	58.0	49.0	31.1	43.5	47.6
Academic education	14.7	7.9	50.4	54.7	26.0	44.9	47.8
Special education	13.0	10.8	45.0	59.2	32.0	48.1	51.0
Vocational teachers by school type							
Comprehensive high school	14.0	10.6	59.2	48.3	30.4	43.2	48.0
Vocational high school	17.9	10.0	48.1	51.0	38.8	43.9	43.2
Other	13.9	10.1	54.5	57.5	28.4	49.2	49.7

SOURCE: U.S. Department of Education, National Center for Education Statistics, Schools and Staffing Survey, 1993–94.

- Most teachers (96 percent) reported that their professional development activities had some impact (table 58). Possible types of impacts surveyed included providing new information, changing teaching views, changing teaching practices, seeking further information or training, or being a waste of time. About 84 percent of all teachers were provided with new information, while 59 percent reported that the activities caused them

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[83] The survey did not specify what methods were taught or what topic was studied in depth.

Table 58—Percentage of public school teachers of grades 9 through 12 who agreed with various statements about the impact of professional development activities, by teaching assignment: 1993–94

Teaching assignment	Had some impact	Provided new information	Changed views on teaching	Caused to change teaching practices	Caused to seek information/ training	Was a waste of time
Total	96.2	83.5	38.4	59.0	58.7	13.7
Vocational education	96.2	86.1	38.5	58.3	60.4	11.1
Academic education	96.1	82.9	38.6	59.1	57.9	14.5
Special education	96.8	84.3	36.4	59.4	62.5	11.2

SOURCE: U.S. Department of Education, National Center for Education Statistics, Schools and Staffing Survey, 1993–94.

to change their teaching practices.[84] Vocational teachers were more likely than academic teachers to report that professional development activities provided new information and caused them to seek further information or training. Vocational teachers were less likely than their academic counterparts to report that professional development activities were a waste of time.

- Almost three-quarters (73 percent) of all teachers reported receiving some support for inservice or professional development activities (table 59). Types of support included release time, scheduled professional development time, travel and/or per diem expenses, tuition and/or fees, and professional growth credits. Vocational teachers were more likely than other teachers to report receiving travel and/or per diem support. This may be related to the fact that they were generally more likely than other teachers to seek professional development opportunities outside their school or district.

Table 59—Percentage of public school teachers of grades 9 through 12 who reported receiving various types of support for inservice/professional development activities, by teaching assignment: 1993–94

			Types of support				
Teaching assignment	None	All	Release time	Scheduled time	Travel and/ or per diem	Tuition and/ or fees	Professional growth credits
Total	27.2	3.1	43.2	35.2	27.7	20.5	28.8
Vocational education	24.9	3.3	42.8	34.8	37.3	21.3	32.2
Academic education	28.4	2.9	42.5	34.6	26.4	20.1	27.8
Special education	21.2	4.1	49.7	40.2	22.6	22.9	31.1

SOURCE: U.S. Department of Education, National Center for Education Statistics, Schools and Staffing Survey, 1993–94.

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[84] The survey did not ask teachers how they changed their teaching practices, only whether they did so.

Vocational teachers reported different professional development experiences depending on their school setting:

- Vocational teachers in vocational schools were significantly less likely than vocational teachers in comprehensive high schools to participate in district-sponsored workshops and were more likely to take extension or adult education courses (table 56).[85] Vocational teachers in comprehensive high schools were significantly less likely than other vocational teachers to have participated in a teaching induction program during their first year of teaching. These findings suggest that regular school districts may be somewhat less successful at meeting the professional development needs of their vocational teachers. It may also be that vocational schools or districts offer fewer activities directly, relying more on outside professional development opportunities.

- Vocational teachers in vocational schools were less likely than vocational teachers in comprehensive and other high schools to participate in inservices on the uses of educational technology, and more likely than these teachers to participate in an in-depth study in their subject field (table 57).[86] This may be due to the different types of vocational programs that are typically offered in vocational and comprehensive schools.[87] Alternatively, this may be due to the possibility of vocational teachers in vocational schools having greater industry experience before entering teaching. Two phenomena suggest that this may be true. First, vocational teachers in vocational schools tended to be older than vocational teachers in comprehensive high schools when they first began to teach (table 60). Second, they were also more likely than these teachers to have less than a bachelor's degree (table 60).[88] As stated previously, some states count industry experience in place of education in hiring some vocational teachers.[89]

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[85] The difference in adult education participation between vocational teachers in vocational high schools and those in unspecified "other" high schools was large but not statistically significant; there were small sample sizes and large standard errors for these two groups.

[86] The difference in participation in inservices on the uses of educational technology between vocational teachers in vocational high schools and those in unspecified "other" high schools was somewhat large but not statistically significant; there were small sample sizes and large standard errors for these two groups.

[87] The previous comprehensive NCES publication on vocational education found that vocational teachers in vocational schools were more like than their counterparts in comprehensive high schools to teach in the trade and industry, technical, and health areas. See K. Levesque, et al., *Vocational Education in the United States: The Early 1990s* (NCES 95–024) (Washington, D.C.: U.S. Department of Education, National Center for Education Statistics, 1995) p. 20.

[88] Vocational teachers in vocational schools were also more likely than their vocational colleagues in "other" schools to have less than a bachelor's degree.

[89] See "The State of Certification," *Vocational Education Journal* 68 (6) (September 1993): 30–35.

Table 60—Percentage distribution of public school teachers of grades 9 through 12 according to age when began teaching and highest educational degree, by teaching assignment and vocational teachers by school type: 1993–94

	Age began teaching					Highest educational degree				
	25 years or less	26–35 years	36–45 years	46–55 years	More than 55 years	Less than bachelor's	Bachelor's	Master's	Educational specialist	Doctorate or first-professional
Total	61.0	29.7	7.6	1.5	0.2	1.7	46.3	45.6	5.3	1.1
Teaching assignment										
Vocational education	54.6	31.8	11.0	2.4	0.2	8.3	46.7	38.7	5.6	0.7
Academic education	63.0	29.1	6.5	1.3	0.1	0.5	46.8	46.6	4.9	1.2
Special education	55.3	31.1	10.8	2.3	0.4	0.2	41.3	49.4	8.2	0.9
Vocational teachers by school type										
Comprehensive high school	58.1	30.5	9.6	1.7	0.2	4.8	48.9	39.9	5.7	0.7
Vocational high school	27.5	40.5	21.8	9.8	0.4	38.9	30.1	25.4	4.7	0.9
Other	46.5	37.8	14.5	0.9	0.3	10.9	39.5	43.5	5.3	0.8

NOTE: Percentages may not add to 100 due to rounding.

SOURCE: U.S. Department of Education, National Center for Education Statistics, Schools and Staffing Survey, 1993–94.

V. Transitions After High School

OVERVIEW

This chapter provides information on the postsecondary education and labor market experiences of public high school graduates. Postsecondary outcomes are presented before labor market outcomes, because, as discussed in Chapter II, postsecondary attainment contributes to labor market success. Two data sets were used in the analysis:

- *High School and Beyond (HS&B)* Sophomore Cohort Second and Fourth Follow-up Surveys

- National Education Longitudinal Study of 1988 (NELS:88) Third Follow-up Survey

The first data set provides information on 1982 public high school graduates 2 and 10 years after their high school graduation, while the second provides information on 1992 public high school graduates 2 years after their graduation. Due to the comparable nature of the data sets, it was possible in this analysis to compare postsecondary and labor market trends 2 years after high school for 1982 and 1992 graduates, although some data elements available in NELS:88 were not present in HS&B. Comparable long-term (10-year) outcomes for the 1992 cohort are obviously not yet available.

When making comparisons of postsecondary and labor market experiences for different groups of high school graduates, the same curriculum-based definitions used in the previous chapter were applied here:

Vocational concentrators completed 3.0 or more credits in a single occupational program area.[90] These program areas include the following:

- agriculture and renewable resources

- business

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[90] A second definition was also sometimes used: *vocational specialists* completed 4.0 or more credits in a single occupational program area, with 2.0 or more of these units taken beyond the introductory level. However, the report generally focuses on the first, less restrictive, definition of vocational concentrators.

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- marketing and distribution
- health care
- public and protective services
- trade and industry
- technology and communications
- food service and hospitality
- child care and education
- personal and other services

College preparatory graduates completed a college preparatory course of study that was consistent with the prevailing entrance requirements at public 4-year institutions. These included 4.0 credits in English; 3.0 credits in mathematics at the Algebra 1 level or higher; 2.0 credits in biology, chemistry, and/or physics; 2.0 credits in social studies with at least 1.0 credit in U.S. or World History; and 2.0 credits in a single foreign language.

Other/general students met neither of the above criteria.

Students who met both the vocational concentrator and college preparatory criteria were included in the vocational concentrators total in the tables and figures. Students who met only the vocational concentrator criteria, as well as the "both" group, were also reported separately. When examining post-high school outcomes, it is important to relate these outcomes to the particular paths that students took in high school. Consequently, in this chapter, outcomes for vocational concentrators who also completed a college preparatory curriculum (the "both" group) are sometimes compared with outcomes for vocational concentrators who did not meet the college preparatory criteria (referred to as "strictly vocational concentrators"). When the vocational concentrator group is divided into these two subgroups, the distinctions are made clear in the text, tables, and figures.

Readers are cautioned against interpreting the findings in this chapter as evidence of the causal impact of vocational education on student outcomes. These data are descriptive only—they describe the post-high school experiences of students completing different courses of study in high school. They are not causal in the sense that participation in vocational education or the college preparatory curricula necessarily caused these outcomes. Factors that influenced students to complete a particular course of study in high school may have a more direct impact on subsequent outcomes than participation in that course of study. For example, students whose parents have a bachelor's degree or higher may be more likely both to complete a college preparatory course of study in high school and to pursue and attain a bachelor's degree after high school. Attributing the finding that college preparatory students were more likely than other students to obtain a bachelor's degree within 10 years of graduating from high school to their having completed a college preparatory course of study is misleading. It is impossible in a descriptive analysis to determine the specific contribution of completing different courses to post-high school outcomes. In order to control for "selection bias" and isolate the impact of particular courses of study on subsequent outcomes, an experimental or quasi-experimental study would have to be performed.

POSTSECONDARY OUTCOMES

The postsecondary education outcomes described in this section include both enrollment in a postsecondary institution after high school, postsecondary remedial coursework taken, and completion of a degree or certificate. The points 2 and 10 years after high school graduation are examined. Generally, the expressions "degree attainment" and "degree completion" used in the text refer to attainment of any postsecondary degree or certificate, not just degrees. The vast majority of the certificates referred to in this section are subbaccalaureate certificates, as opposed to 4-year or post-baccalaureate certificates (such as some teaching credentials).[91]

The Transition to Postsecondary Education: Two Years After High School

Within 2 years after graduating from public high school in 1992, about three out of every four students enrolled in a postsecondary institution. This indicates a marked increase in postsecondary enrollment rates from a decade earlier, when about half of 1982 public high school graduates enrolled in a postsecondary institution within 2 years of graduating. Between 1982 and 1992, postsecondary enrollment rates increased for vocational concentrators and students completing general coursework in high school, but not for college preparatory graduates. While the gap in enrollment rates among the three main curriculum-based groups appeared to be narrowing, 1992 vocational concentrators were still less likely than their college preparatory and other/general peers to enroll in a postsecondary institution within 2 years. However, vocational concentrators who also completed a college preparatory curriculum had enrollment outcomes that were more like those of their college preparatory peers than did strictly vocational concentrators.

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[91] HS&B and NELS:88 did not specify types of certificates in the survey questions asked of respondents about degree attainment. The vast majority of these certificates, however, appear to have been awarded by 2-year institutions.

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Vocational concentrators were more likely than their other/general peers to obtain a degree or certificate within 2 years, despite the fact that the two groups enrolled at similar rates in community colleges and that vocational concentrators were more likely to be employed while in school.

- Fifty-seven percent of 1982 public high school graduates had enrolled in postsecondary education within 2 years of graduation, in contrast to 73 percent of 1992 graduates (tables 61 and 62). Both 1992 vocational concentrators and other/general students were more likely to enroll in postsecondary education within 2 years than their 1982 counterparts. Forty-two percent of 1982 vocational concentrators enrolled in postsecondary education, while 55 percent of 1992 vocational concentrators did so. Similarly, 61 percent of 1982 high school graduates who completed general coursework in high school pursued further education by 1984, while 69 percent of their 1992 counterparts enrolled in postsecondary education within 2 years of leaving high school. There was no significant difference in the postsecondary enrollment rates for college preparatory graduates over the decade studied.

Table 61—Percentage distribution of 1982 public high school graduates according to their enrollment status in postsecondary institutions by 1984, by curriculum specialization and hours worked per week in high school

Curriculum specialization and hours worked	Never enrolled	Enrolled
Total	42.7	57.3
Curriculum specialization in high school		
College preparatory only	4.4	95.6
Vocational concentrators total*	58.5	41.5
Vocational concentration only	59.3	40.8
Both vocational concentration and college preparatory	14.1	85.9
Other/general	38.8	61.2
Hours worked per week in high school		
None	38.1	61.9
1–14	38.1	61.9
15–34	46.1	53.9
35 or more	58.2	41.8

*Includes students who completed both a vocational concentration and a college preparatory curriculum.

NOTE: Percentages may not add to 100 due to rounding.

SOURCE: U.S. Department of Education, National Center for Education Statistics, High School and Beyond Sophomore Cohort 1982 High School Transcript Study and Second Follow-up Survey.

Table 62—Percentage distribution of 1992 public high school graduates according to their enrollment status in post-secondary institutions by 1994, and of those enrolled, percentage distribution according to type of first institution, by curriculum specialization in high school

Curriculum specialization	Enrollment status		Of those enrolled, type of first institution					
	Never enrolled	Enrolled	Public 4-year	Private, not-for-profit 4-year	Public 2-year	Private, not-for-profit 2-year	Public vocational–technical	Private, for-profit
Total	27.0	73.0	39.3	17.3	36.7	0.3	1.6	4.8
College preparatory only	6.8	93.2	52.3	26.4	18.7	0.0	1.5	1.0
Vocational concentrators total*	45.3	54.7	30.5	8.5	49.9	1.0	1.9	8.3
Vocational concentration only	51.2	48.8	21.8	6.3	58.4	1.2	1.8	10.5
Both vocational concentration and college preparatory	9.4	90.6	58.8	15.7	21.9	0.3	2.2	1.2
Other/general	30.9	69.1	31.2	12.8	47.4	0.3	1.6	6.8

*Includes students who completed both a vocational concentration and a college preparatory curriculum.

NOTE: Percentages may not add to 100 due to rounding. Row n's may not add to total n's because of missing data. Estimates appearing as 0.0 may be nonzero but less than 0.05.

SOURCE: U.S. Department of Education, National Center for Education Statistics, National Education Longitudinal Study of 1988, Third Follow-up and High School Transcript Study.

- Among 1992 public high school graduates, vocational concentrators were less likely than their peers to enroll in a postsecondary institution within 2 years after completing high school (table 62). Specifically, about 55 percent of vocational concentrators had enrolled, compared with 93 percent of college preparatory students and 69 percent of other/general students. Vocational concentrators who also completed a college preparatory curriculum were about as likely to enroll in a postsecondary institution as their college preparatory peers (91 percent versus 93 percent). Patterns among the different curriculum-based groups were similar for 1982 public high school graduates (table 61).

- Among 1992 public high school graduates who enrolled in postsecondary education within 2 years of graduation, vocational concentrators were more likely to enroll in community colleges than were college preparatory graduates (50 versus 19 percent), but they enrolled in these institutions at rates that resembled those of other/general graduates (47 percent) (table 62). College preparatory graduates and vocational concentrators who also completed a college preparatory curriculum were more likely to enroll in 4-year postsecondary institutions than their strictly vocational and other/general peers. Patterns among the different curriculum-based groups were similar for 1982 public high school graduates (table 63).[92]

- Among those who enrolled in postsecondary education within 2 years of high school graduation in 1992, vocational concentrators were more likely to be employed than were their college preparatory peers, but were about as likely to be employed as other/general graduates (44 percent versus 17 percent and 38 percent, respectively) (tables 64 and 65; figure 26).

- Among 1992 public high school graduates who were employed as well as enrolled in postsecondary education 2 years later, those who were vocational concentrators in high school had a stronger work orientation than other students (table 64). About one quarter (26 percent) of postsecondary students who were vocational concentrators in high school identified themselves primarily as workers rather than as students. In comparison, 8 percent of postsecondary students who were college preparatory graduates and 22 percent of postsecondary students who were other/general graduates in high school considered themselves primarily as workers.

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[92] Among 1982 graduates, however, vocational concentrators were statistically more likely than other/general graduates to enroll at community colleges. In addition, vocational concentrators who also completed a college preparatory curriculum were not more likely than strictly vocational concentrators or other/general graduates to enroll at public 4-year institutions.

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Table 63—Percentage distribution of 1982 public high school graduates enrolled in postsecondary institutions by 1984 according to type of institution, by curriculum specialization and hours worked per week in high school

Curriculum specialization and hours worked	Public 4-year	Private, not-for-profit 4-year	Public 2-year	Private, not-for-profit 2-year	Public vocational–technical	Private, for-profit
Total	38.8	15.3	37.1	1.9	1.8	5.1
Curriculum specialization in high school						
College preparatory only	53.0	25.1	18.2	1.4	0.3	2.0
Vocational concentrators total*	27.4	9.9	48.3	3.0	3.3	8.1
Vocational concentration only	27.6	8.9	48.8	3.1	3.4	8.2
Both vocational concentration and college preparatory	22.6	38.1	33.0	0.0	0.0	6.3
Other/general	40.3	15.3	36.8	1.6	1.5	4.6
Hours worked per week in high school						
None	39.3	17.3	35.6	1.8	1.2	4.7
1–14	42.2	17.5	32.3	1.9	1.6	4.4
15–34	36.9	12.3	40.2	2.3	2.1	6.2
35 or more	34.3	8.7	46.9	1.1	4.3	4.9

*Includes students who completed both a vocational concentration and a college preparatory curriculum.

NOTE: Percentages may not add to 100 due to rounding. Estimates appearing as 0.0 may be nonzero but less than 0.05.

SOURCE: U.S. Department of Education, National Center for Education Statistics, High School and Beyond Sophomore Cohort 1982 High School Transcript Study and Fourth Follow-up Survey.

Table 64—Percentage distribution of 1992 public high school graduates enrolled in postsecondary education in 1994 according to their employment status and work orientation, by curriculum specialization in high school

		Employed		
			Work orientation	
Curriculum specialization	Not employed	Total	Primarily student, also employed	Primarily employed, also student
Total	69.4	30.6	13.6	17.1
College preparatory only	83.1	16.9	9.4	7.6
Vocational concentrators total*	56.0	44.0	17.9	26.1
Vocational concentration only	48.9	51.1	20.0	31.1
Both vocational concentration and college preparatory	78.2	21.8	11.3	10.4
Other/general	62.5	37.5	15.6	22.0

*Includes students who completed both a vocational concentration and a college preparatory curriculum.

NOTE: Percentages may not add to 100 due to rounding. Row n's may not add to total n's because of missing data.

SOURCE: U.S. Department of Education, National Center for Education Statistics, National Education Longitudinal Study of 1988, Third Follow-up and High School Transcript Study.

Table 65—Percentage distribution of 1992 public high school graduates according to their education and employment status in 1994, by curriculum specialization in high school

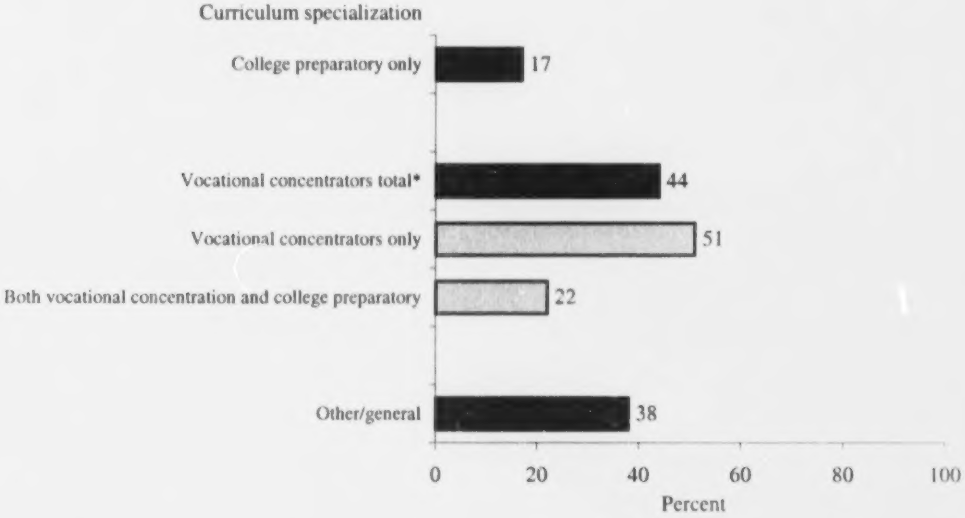
Curriculum specialization	Education status		Education/employment status					
	Student	Nonstudent	Traditional student, not employed	Primarily student, also employed	Primarily employed, also student	Nonstudent, employed	Nonstudent, not employed	Nonstudent, not in labor force
Total	69.1	30.9	47.9	9.4	11.8	27.8	0.9	2.1
College preparatory only	90.0	10.0	74.8	8.5	6.8	8.9	0.3	0.7
Vocational concentrators total*	51.8	48.2	29.0	9.3	13.5	44.8	0.8	2.6
Vocational concentration only	45.7	54.3	22.3	9.2	14.2	50.4	0.9	3.0
Both vocational concentration and college preparatory	89.5	10.5	70.0	10.1	9.3	10.2	0.0	0.3
Other/general	64.6	35.4	40.4	10.1	14.2	31.2	1.5	2.8

*Includes students who completed both a vocational concentration and a college preparatory curriculum.

NOTE: Percentages may not add to 100 due to rounding. Row n's may not add to total n's because of missing data. Estimates appearing as 0.0 or 0.00 may be nonzero but less than 0.05 or 0.005.

SOURCE: U.S. Department of Education, National Center for Education Statistics, National Education Longitudinal Study of 1988, Third Follow-up and High School Transcript Study.

Figure 26—Percentage of 1992 public high school graduates enrolled in postsecondary education in 1994 who were also employed, by curriculum specialization in high school



*Includes students who completed both a vocational concentration and a college preparatory curriculum.

SOURCE: U.S. Department of Education, National Center for Education Statistics, National Education Longitudinal Study of 1988, Third Follow-up and High School Transcript Study.

- Among 1992 public high school graduates who enrolled in postsecondary education within 2 years of completing high school, about 12 percent of vocational concentrators and 9 percent of other/general graduates had completed an associate's degree or certificate by 1994 (table 66). In contrast, 6 percent of college preparatory graduates had done so. Vocational concentrators were more likely than their other/general peers to obtain a degree or certificate within 2 years, despite the findings noted above that the two groups enrolled at similar rates in community colleges and that vocational concentrators were more likely to be employed while in school. Similar differences in rates of award completion were found among 1982 public high school graduates (table 67).

Table 66—Percentage distribution of 1992 public high school graduates according to their postsecondary enrollment and attainment status by 1994, by curriculum specialization in high school

			Attainment of all high school graduates					Attainment of those enrolled by 1994			
	Enrollment status		No degree		Degree or certificate				Certificate or degree		
Curriculum specialization	Never enrolled	Enrolled	Never enrolled	Enrolled	Total	Certificate	Associate's degree	No degree	Total	Certificate	Associate's degree
Total	26.1	73.9	26.1	67.9	6.1	5.9	0.2	91.8	8.2	7.9	0.3
College preparatory only	6.6	93.4	6.6	87.8	5.6	5.4	0.2	94.0	6.0	5.8	0.2
Vocational concentrators total*	43.4	56.6	43.4	50.1	6.5	6.4	0.2	88.5	11.6	11.2	0.3
Vocational concentration only	49.0	51.0	49.0	44.3	6.7	6.5	0.2	86.9	13.1	12.8	0.3
Both vocational concentration and college preparatory	9.1	90.9	9.1	85.2	5.7	5.4	0.3	93.8	6.3	5.9	0.4
Other/general	29.5	70.5	29.5	64.4	6.1	5.9	0.2	91.4	8.6	8.3	0.3

*Includes students who completed both a vocational concentration and a college preparatory curriculum.

NOTE: Percentages may not add to 100 due to rounding. Row n's may not add to total n's because of missing data.

SOURCE: U.S. Department of Education, National Center for Education Statistics, National Education Longitudinal Study of 1988, Third Follow-up and High School Transcript Study.

Table 67—Percentage distribution of 1982 public high school graduates according to their postsecondary attainment by 1984, by curriculum specialization and hours worked per week in high school

Curriculum specialization and hours worked	No degree	Certificate or degree		
		Total	Certificate	Associate's degree
Total	89.9	10.1	5.0	5.1
Curriculum specialization in high school				
College preparatory only	96.2	3.8	0.6	3.1
Vocational concentrators total*	85.8	14.2	7.8	6.5
Vocational concentration only	85.5	14.5	7.8	6.7
Both vocational concentration and college preparatory	94.1	5.9	5.9	0.0
Other/general	90.4	9.6	4.7	4.9
Hours worked per week in high school				
None	91.1	8.9	3.5	5.4
1–14	89.5	10.5	5.3	5.2
15–34	88.7	11.3	5.9	5.4
35 or more	91.7	8.3	5.3	3.0

*Includes students who completed both a vocational concentration and a college preparatory curriculum.

NOTE: Percentages may not add to 100 due to rounding. Estimates appearing as 0.0 may be nonzero but less than 0.05.

SOURCE: U.S. Department of Education, National Center for Education Statistics, High School and Beyond Sophomore Cohort 1982 High School Transcript Study and Second Follow-up Survey.

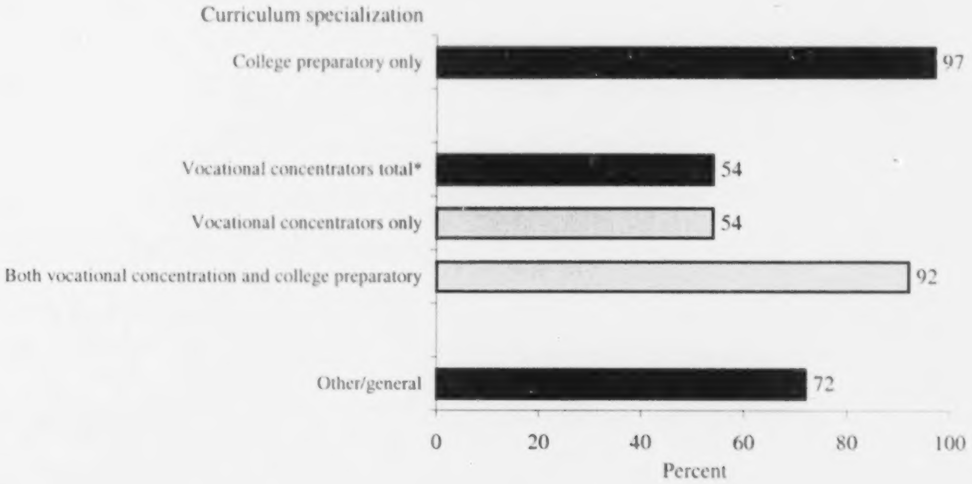
The Transition to Postsecondary Education: Ten Years After High School

Initial indications are that long-term postsecondary enrollment rates have increased for public high school graduates over the decade from 1982 to 1992. About three-fourths of 1992 graduates enrolled in a postsecondary institution within 2 years of graduation, while two-thirds of 1982 graduates enrolled within a full 10 years after graduation. By the year 2002, the 10-year enrollment rate is likely to be even higher than 74 percent for 1992 graduates.

Among 1982 graduates, vocational concentrators were less likely than either their other/general or college preparatory peers to enroll in postsecondary education by 1992. However, vocational concentrators who also completed a college preparatory curriculum were about as likely as college preparatory graduates to enroll during this timeframe. Students who worked fewer than 15 hours per week during their senior year of high school were more likely to both enroll in postsecondary education and complete a postsecondary degree or certificate within 10 years than their peers who worked more hours.

- About two-thirds (68 percent) of 1982 public high school graduates enrolled in postsecondary education by 1992 (table 68; figure 27). Vocational concentrators were less likely than either their other/general or college preparatory peers to enroll within 10 years (54 percent versus 72 percent and 97 percent, respectively). However, vocational concentrators who also completed a college preparatory curriculum were about as likely as college preparatory graduates to enroll during this time frame (92 percent and 97 percent, respectively).

Figure 27—Percentage of 1982 public high school graduates who were enrolled in postsecondary education by 1992, by curriculum specialization in high school



*Includes students who completed both a vocational concentration and a college preparatory curriculum.

SOURCE: U.S. Department of Education, National Center for Education Statistics, High School and Beyond Sophomore Cohort 1982 High School Transcript Study and Fourth Follow-up Survey.

- Most 1982 public high school graduates (92 percent) who subsequently enrolled in postsecondary education did so within 3 years of high school graduation (table 69). Vocational concentrators were more likely than college preparatory graduates to delay their enrollment. Among graduates who enrolled within 10 years, 6 percent of vocational concentrators enrolled more than 5 years after high school graduation, compared with 0.2 percent of college preparatory graduates. However, most vocational concentrators (87 percent) enrolled within 3 years.

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Table 68—Percentage distribution of 1982 public high school graduates according to their postsecondary enrollment and attainment status by 1992, by curriculum specialization in high school

			Attainment of all high school graduates							Attainment of those enrolled				
					Certificate or degree					Certificate or degree				
	Enrollment status		No degree			Less than a bachelor's			Bachelor's or higher		Less than a bachelor's			Bachelor's or higher
Curriculum specialization	Never enrolled	Enrolled	Never enrolled	Enrolled	Total	Total	Certificate	Associate's		Total	Total	Certificate	Associate's	
Total	32.1	67.9	32.1	29.7	38.2	12.4	5.7	6.7	25.9	56.3	18.2	8.3	9.9	38.1
College preparatory only	3.5	96.6	3.5	22.2	74.3	7.8	2.2	5.6	66.6	77.0	8.1	2.3	5.8	68.9
Vocational concentrators total*	45.7	54.3	45.7	28.5	25.8	13.9	7.1	6.8	11.9	47.6	25.6	13.0	12.6	21.9
Vocational concentration only	46.4	53.6	46.4	28.7	25.0	13.9	7.1	6.8	11.1	46.6	25.9	13.3	12.7	20.7
Both vocational concentration and college preparatory	7.8	92.2	7.8	17.7	74.5	13.9	4.9	8.9	60.6	80.8	15.0	5.4	9.7	65.7
Other/general	28.3	71.7	28.3	31.5	40.2	12.1	5.3	6.8	28.1	56.1	16.9	7.4	9.5	39.2

*Includes students who completed both a vocational concentration and a college preparatory curriculum.

NOTE: Percentages may not add to 100 due to rounding.

SOURCE: U.S. Department of Education, National Center for Education Statistics, High School and Beyond Sophomore Cohort 1982 High School Transcript Study and Fourth Follow-up Survey.

Table 69—Percentage distribution of 1982 public high school graduates who subsequently enrolled according to the timing of their first postsecondary enrollment, by curriculum specialization in high school

	Annual enrollments												
Curriculum specialization	Within 1 year	Within 1–2 years	Within 2–3 years	Within 3–4 years	Within 4–5 years	Within 5–6 years	Within 6–7 years	Within 7–8 years	Within 8–9 years	After 9 years	Within 1–3 years	Within 1–5 years	After 5 years
Total	83.1	6.0	3.1	1.7	1.3	0.9	1.0	1.2	0.7	1.0	92.2	96.1	3.9
College preparatory only	94.3	4.3	1.0	0.2	0.0	0.0	0.1	0.0	0.1	0.0	99.6	99.9	0.2
Vocational concentrators total*	74.4	7.6	5.2	2.9	2.3	1.6	1.0	1.9	1.8	1.4	87.2	93.9	6.1
Vocational concentration only	74.0	7.7	5.4	3.0	2.4	1.6	0.9	2.0	1.8	1.4	87.0	93.9	6.1
Both vocational concentration and college preparatory	88.8	5.3	0.0	0.4	0.0	1.3	4.3	0.0	0.0	0.0	94.1	95.7	4.3
Other/general	84.5	5.7	2.6	1.6	1.1	0.9	1.1	1.1	0.4	1.1	92.8	96.4	3.7

*Includes students who completed both a vocational concentration and a college preparatory curriculum.

NOTE: Within 1 year indicates the percentage of 1992 high school graduates who enrolled in their first postsecondary institution from June 1983 to May 1984. Similarly, within 1–2 years suggests that the graduates enrolled in their first institution from June 1984 to May 1985. Percentages may not add to 100 due to rounding. Estimates appearing as 0.0 may be nonzero but less than 0.05.

SOURCE: U.S. Department of Education, National Center for Education Statistics, High School and Beyond Sophomore Cohort 1982 High School Transcript Study and Fourth Follow-up Survey

- Enrollment rates for vocational concentrators varied by program area. For example, among those with a vocational concentration, concentrators in technology and communications and in business were more likely to enroll in postsecondary education within 10 years than concentrators in personal services and in trade and industry (81 percent and 64 percent, respectively, versus 37 percent and 47 percent, respectively) (table 70).

- Those 1982 public high school graduates who worked 15 or more hours per week during their senior year of high school were less likely than their counterparts working fewer than 15 hours per week to enroll in postsecondary education by 1992 (table 71). About 71–72 percent of graduates who worked fewer than 15 hours per week during their senior year enrolled in postsecondary education by 1992, compared with 65 percent of graduates who worked 15 to 34 hours per week and 55 percent of graduates who worked full time (35 or more hours per week). Readers are cautioned against interpreting this finding as evidence of the causal impact of working fewer hours on greater postsecondary enrollment. It may be that graduates working fewer than 15 hours per week were more likely for other reasons to enroll in college. For example, as discussed in Chapter IV, 1992 college preparatory graduates were significantly less likely than vocational concentrators to work part time during their senior year (table 42). They were also significantly less likely than other/general graduates to work part time.[93]

- Among 1982 public high school graduates who enrolled in postsecondary education by 1992, those who worked 15 or more hours per week during their senior year of high school were less likely than those working 1–14 hours per week to have earned a postsecondary degree (table 71). Specifically, 53 percent of graduates who worked 15 to 34 hours per week in high school and 43 percent of those who worked 35 or more hours per week obtained a degree within 10 years, compared with 61 percent of graduates who worked 1 to 14 hours per week.

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[93] Some research has shown that work experience while in school may have other benefits. For some students, work experience appears to reduce their risk of dropping out of high school. See, for example, D.R. Entwisle, K.L. Alexander, and L.S. Olson, *Urban Teenagers: Work, Stopout and Dropout* (Baltimore, MD: Johns Hopkins University, July 2, 1999).

Table 70—Percentage distribution of 1982 public high school vocational concentrator graduates according to their postsecondary enrollment and attainment status by 1992, by program area of high school vocational concentration

			Attainment of all high school graduates							Attainment of those enrolled				
					Certificate or degree					Certificate or degree				
	Enrollment status		No degree			Less than a bachelor's					Less than a bachelor's			
Vocational concentration program area[1]	Never enrolled	Enrolled	Never enrolled	Enrolled	Total	Total	Certificate	Associate's	Bachelor's or higher	Total	Total	Certificate	Associate's	Bachelor's or higher
Total	32.1	67.9	32.1	29.7	38.2	12.4	5.7	6.7	25.9	56.3	18.2	8.3	9.9	38.1
No concentration	25.2	74.8	25.2	30.3	44.5	11.6	4.9	6.6	33.0	59.5	15.5	6.6	8.9	44.0
Agriculture and renewable resources	49.4	50.6	49.4	24.7	25.9	12.2	7.3	4.9	13.7	51.2	24.1	14.4	9.7	27.1
Business	36.3	63.8	36.3	32.0	31.7	18.3	8.1	10.1	13.5	49.8	28.6	12.7	15.9	21.1
Marketing and distribution	36.2	63.8	36.2	40.0	23.8	6.8	1.4	5.4	17.0	37.3	10.6	2.2	8.5	26.7
Health care	50.6	49.4	50.6	31.1	18.4	13.5	7.2	6.3	4.9	—	—	—	—	—
Public and protective services	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Trade and industry	52.9	47.1	52.9	25.0	22.1	11.6	6.9	4.8	10.5	46.9	24.7	14.6	10.1	22.3
Technology and communications	18.8	81.2	18.8	37.1	44.1	15.5	2.2	13.3	28.7	54.3	19.0	2.7	16.3	35.3
Occupational home economics[2]	59.1	41.0	59.1	25.5	15.5	12.8	8.0	4.8	2.7	37.7	31.2	19.6	11.6	6.6
Personal and other services	62.9	37.2	62.9	23.2	13.9	10.4	5.3	5.1	3.5	—	—	—	—	—
Food service and hospitality	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Child care and education	—	—	—	—	—	—	—	—	—	—	—	—	—	—

—Too few sample observations for a reliable estimate.

[1] Vocational concentrators earned 3 or more credits in a single vocational program area.

[2] Occupational home economics combines personal and other services, food service and hospitality, and child care and education.

NOTE: Percentages may not add to 100 due to rounding.

SOURCE: U.S. Department of Education, National Center for Education Statistics, High School and Beyond Sophomore Cohort 1982 High School Transcript Study and Fourth Follow-up Survey.

Table 71—Percentage distribution of 1982 public high school graduates according to their postsecondary enrollment and attainment status by 1992, by selected student characteristics

			Attainment of all high school graduates							Attainment of those enrolled				
	Enrollment status		No degree		Certificate or degree					Certificate or degree				
						Less than a bachelor's			Bachelor's		Less than a bachelor's			Bachelor's
Selected student characteristics	Never enrolled	Enrolled	Never enrolled	Enrolled	Total	Total	Certificate	Associate's	or higher	Total	Total	Certificate	Associate's	or higher
Total	32.1	67.9	32.1	29.7	38.2	12.4	5.7	6.7	25.9	56.3	18.2	8.3	9.9	38.1
Hours worked per week in high school														
None	28.1	71.9	28.1	30.2	41.7	12.4	5.5	6.9	29.3	58.0	17.2	7.6	9.6	40.8
1–14	29.0	71.0	29.0	27.4	43.6	12.4	5.9	6.5	31.2	61.5	17.5	8.3	9.2	44.0
15–34	34.7	65.3	34.7	31.0	34.4	12.9	5.9	7.0	21.4	52.6	19.8	9.1	10.7	32.8
35 or more	45.5	54.5	45.5	31.0	23.5	9.9	4.8	5.1	13.6	43.2	18.1	8.7	9.4	25.0
College preparatory only	3.5	96.6	3.5	22.2	74.3	7.8	2.2	5.6	66.6	77.0	8.1	2.3	5.8	68.9
Vocational concentrators total*	45.7	54.3	45.7	28.5	25.8	13.9	7.1	6.8	11.9	47.6	25.6	13.0	12.6	21.9
Vocational concentration only	46.4	53.6	46.4	28.7	25.0	13.9	7.1	6.8	11.1	46.6	25.9	13.3	12.7	20.7
Both vocational concentration and college preparatory	7.8	92.2	7.8	17.7	74.5	13.9	4.9	8.9	60.6	80.8	15.0	5.4	9.7	65.7
Other/general	28.3	71.7	28.3	31.5	40.2	12.1	5.3	6.8	28.1	56.1	16.9	7.4	9.5	39.2

*Includes students who completed both a vocational concentration and a college preparatory curriculum.

NOTE: Percentages may not add to 100 due to rounding.

SOURCE: U.S. Department of Education, National Center for Education Statistics, High School and Beyond Sophomore Cohort 1982 High School Transcript Study and Fourth Follow-up Survey.

Remedial Coursework in Postsecondary Education

Among 1982 public high school graduates who enrolled in postsecondary education by 1992, students earned, on average, approximately one and a half remedial credits in postsecondary coursework. In general, vocational concentrators completed more remedial coursework than their peers. Postsecondary degree completers earned fewer remedial credits than their counterparts who enrolled in postsecondary education but did not earn a degree or certificate. Among postsecondary award holders, certificate and bachelor's degree completers earned fewer remedial credits than graduates completing an associate's degree. Comparing remedial coursework by type of degree or certificate is relevant, because vocational education policy has emphasized greater educational attainment in recent years.

- On average, 1982 public high school graduates who enrolled in postsecondary education by 1992 completed 1.4 remedial credits in postsecondary coursework (table 72; figure 28). Graduates completed most of this coursework in mathematics: 53 percent of all remedial coursework was in mathematics, compared with 9 percent in English and 38 percent in other areas.

- Vocational concentrators earned more remedial credits than other 1982 public high school graduates, although they were more like other/general graduates in terms of the amount of credits earned than like their college preparatory peers (earning 1.8 credits versus 1.4 and 0.6 credits, respectively) (table 72; figure 28). Vocational concentrators who also completed a college preparatory curriculum earned fewer remedial credits, on average, than their strictly vocational peers (1.0 credit versus 1.8 credits).[94]

- Among 1982 public high school graduates who enrolled in postsecondary education by 1992, vocational concentrators and other/general graduates took a greater proportion of their remedial coursework in mathematics than did college preparatory graduates (55 percent and 54 percent, respectively, versus 44 percent) (table 72).

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[94] The difference in average number of remedial credits earned between vocational concentrators who also completed a college preparatory curriculum and graduates who completed only a college preparatory curriculum was not statistically significant (1.0 versus 0.6 credits).

Table 72—Average number of postsecondary remedial credits earned by 1982 public high school graduates by 1992, and of those earning remedial credits, percentage distribution according to subject of remedial credits, by curriculum specialization in high school

Curriculum specialization	Total	Average number of remedial credits[1]			Percentage of total remedial credits earned[1]		
		English	Mathematics	Other	English	Mathematics	Other
Total	1.39	0.15	0.72	0.52	9.2	53.1	37.7
College preparatory only	0.62	0.07	0.25	0.30	10.5	43.7	45.8
Vocational concentrators total[2]	1.75	0.19	0.91	0.65	8.5	54.6	36.9
Vocational concentration only	1.77	0.19	0.93	0.65	8.5	54.7	36.8
Both vocational concentration and college preparatory	0.97	0.07	0.40	0.50	—	—	—
Other/general	1.39	0.16	0.72	0.51	9.4	53.6	37.0

—Too few sample observations for a reliable estimate.

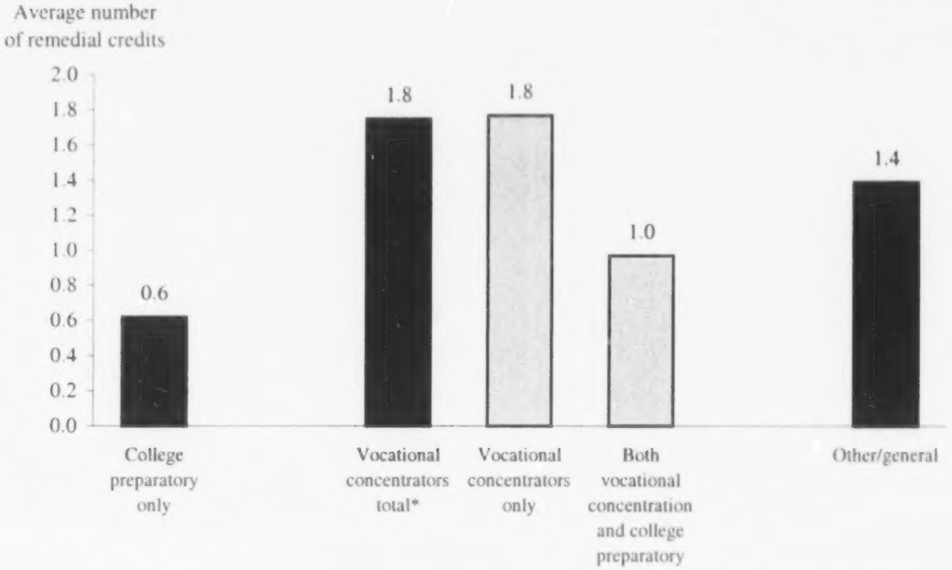
[1] Averages are for all 1982 public high school graduates, while percentages are for those graduates earning postsecondary remedial credits.

[2] Includes students who completed both a vocational concentration and a college preparatory curriculum.

NOTE: Averages may not add to totals and percentages may not add to 100 due to rounding.

SOURCE: U.S. Department of Education, National Center for Education Statistics, High School and Beyond Sophomore Cohort 1982 High School Transcript Study and Fourth Follow-up Survey.

Figure 28—Average number of remedial credits earned by 1982 public high school graduates who entered a postsecondary institution by 1992, by curriculum specialization in high school



*Includes students who completed both a vocational concentration and a college preparatory curriculum.

SOURCE: U.S. Department of Education, National Center for Education Statistics, High School and Beyond Sophomore Cohort 1982 High School Transcript Study and Fourth Follow-up Survey.

- Among 1982 public high school graduates who enrolled in postsecondary education by 1992, those attaining a postsecondary degree or certificate earned fewer remedial credits than those who did not attain a degree or certificate (1.2 credits versus 1.6 credits) (table 73). Although taking remedial coursework may slow students' progress toward a degree, students who take more remedial coursework may be less likely to obtain a degree in the first place. Perhaps this pattern exists because these students have lower educational aspirations or because they are more academically at risk.

- Among 1982 public high school graduates who enrolled in postsecondary education by 1992, those obtaining an associate's degree completed more remedial coursework than either certificate or bachelor's degree earners (2.2 credits versus 1.3 credits and 1.0 credits, respectively) (table 73). There may be several reasons why associate's degree holders complete more remedial coursework. Associate's degree programs may have stricter academic prerequisites than certificate programs; alternatively, associate's degree earners may complete more coursework overall than certificate earners. In addition,

Table 73—Average number of postsecondary remedial credits earned by 1982 public high school graduates by 1992, and of those earning remedial credits, percentage distribution according to subject of remedial credits, by degree attainment by 1992

Degree attainment	Total	Average number of remedial credits*			Percentage of total remedial credits earned*		
		English	Mathematics	Other	English	Mathematics	Other
Total	1.39	0.15	0.72	0.52	9.2	53.1	37.7
None	1.60	0.21	0.85	0.54	10.4	56.6	33.0
Any certificate or degree	1.23	0.11	0.62	0.51	8.2	50.2	41.6
Certificate	1.31	0.07	0.57	0.67	4.6	43.5	51.9
Associate's degree	2.16	0.20	1.18	0.78	8.3	55.0	36.7
Bachelor's degree or higher	0.99	0.09	0.49	0.41	9.0	49.8	41.3

*Averages are for all 1982 public high school graduates, while percentages are for those graduates earning postsecondary remedial credits.

NOTE: Averages may not add to totals and percentages may not add to 100 due to rounding.

SOURCE: U.S. Department of Education, National Center for Education Statistics, High School and Beyond Sophomore Cohort 1982 High School Transcript Study and Fourth Follow-up Survey.

associate's degree earners may be less academically prepared than students who pursue a bachelor's degree; alternatively, 2-year institutions may be more likely to offer remedial coursework than 4-year institutions.

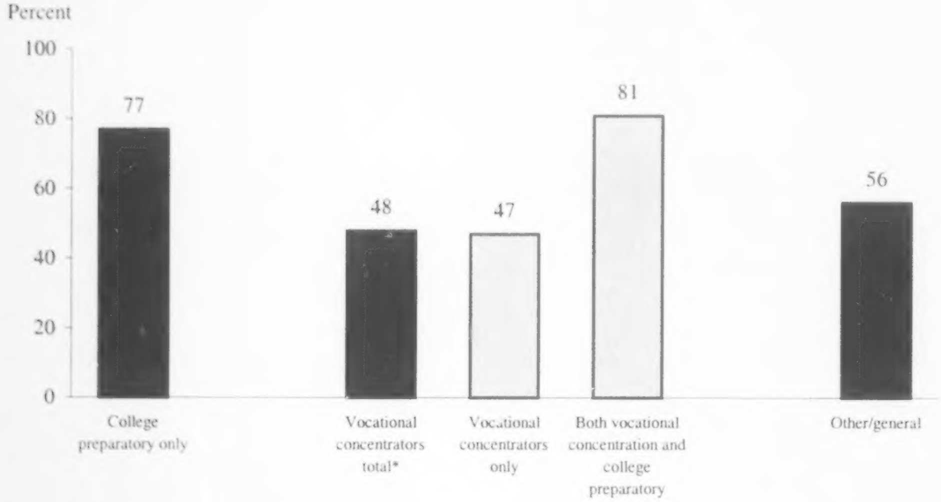
Postsecondary Completion 10 Years After High School

More than half of 1982 public high school graduates who enrolled in postsecondary education completed a degree or certificate by 1992. Vocational concentrators had lower postsecondary completion rates overall than their peers. However, vocational concentrators who also completed a college preparatory curriculum were as likely as college preparatory graduates to earn a postsecondary degree during this period. Among graduates who enrolled in postsecondary education by 1992, vocational concentrators were less likely than their peers to earn a bachelor's degree, but more likely to obtain a certificate or an associate's degree.

- Among 1982 public high school graduates who enrolled in postsecondary education after high school, 56 percent completed a degree or certificate within 10 years (table 68; figure 29). Vocational concentrators had lower postsecondary completion rates than their college preparatory and other/general peers (48 percent versus 77 percent and 56 percent, respectively). Vocational concentrators who also completed a college preparatory curriculum were as likely as college preparatory graduates to earn a postsecondary degree during this period (81 percent versus 77 percent).

- Among 1982 public high school graduates who enrolled in postsecondary education by 1992, vocational concentrators were more likely than both college preparatory and other/general graduates to complete a certificate (13 versus 2 and 7 percent, respectively) or an associate's degree (13 versus 6 and 10 percent, respectively), and less likely to complete a bachelor's degree (22 versus 69 and 39 percent, respectively) (table 68). Again, vocational concentrators who also completed a college preparatory curriculum in high school exhibited rates of certificate and degree completion that were similar to those of their college preparatory peers.

Figure 29—Percentage of 1982 public high school graduates who were enrolled in postsecondary education according to their attainment status by 1992, by curriculum specialization in high school



*Includes students who completed both a vocational concentration and a college preparatory curriculum.

SOURCE: U.S. Department of Education, National Center for Education Statistics, High School and Beyond Sophomore Cohort 1982 High School Transcript Study and Fourth Follow-up Survey.

- Among 1982 public high school graduates who enrolled in postsecondary education by 1992, most associate's degree and certificate earners obtained their awards in vocational rather than academic areas (table 74). Almost two-thirds (63 percent) of associate's degree earners and virtually all (99 percent) of certificate earners obtained their awards in vocational areas.

LABOR MARKET OUTCOMES

The labor market outcomes described in this section include participation in the labor force, employment and unemployment rates, and earnings. The points 2 and 10 years after high school graduation are examined.

Table 74—Percentage distribution of 1982 public high school graduates who earned an associate's degree and/or a certificate by 1992 according to postsecondary program, by curriculum specialization in high school

Curriculum specialization	Associate's degree				Certificate			Associate's degree or certificate			
	Total	Vocational	Academic	Other	Total	Vocational	Academic	Total	Vocational	Academic	Other
Total	6.7	62.8	27.4	9.8	25.9	98.9	1.2	32.6	79.0	15.6	5.4
College preparatory only	5.6	—	—	—	66.6	—	—	72.1	74.9	16.4	8.7
Vocational concentrators total*	6.8	69.8	25.7	4.4	11.9	98.9	1.1	18.7	84.4	13.4	2.2
Vocational concentration only	6.8	69.1	26.4	4.5	11.1	98.9	1.1	17.9	84.1	13.6	2.3
Both vocational concentration and college preparatory	8.9	—	—	—	60.6	—	—	69.5	—	—	—
Other/general	6.8	58.3	29.1	12.6	28.1	98.8	1.2	34.9	75.9	17.0	7.1

—Too few sample observations for a reliable estimate.

*Includes students who completed both a vocational concentration and a college preparatory curriculum.

NOTE: Percentages may not add to 100 due to rounding.

SOURCE: U.S. Department of Education, National Center for Education Statistics, High School and Beyond Sophomore Cohort 1982 High School Transcript Study and Fourth Follow-up Survey.

Labor Market Outcomes 2 Years After High School

Labor market experiences 2 years after leaving high school were similar for the graduating classes of 1982 and 1992. In both cases, about three out of four public high school graduates were in the labor force. Vocational concentrators in both graduating classes were more likely than their college preparatory peers to be in the labor force 2 years after graduation. While 1992 public high school graduates had similar labor market experiences regardless of their course of study in high school, 1982 college preparatory graduates tended to have lower unemployment rates than their vocational concentrator and other/general peers. This difference may be due to changes over the decade in economic conditions or in the academic preparation of high school graduates, or other factors.

- Among 1992 public high school graduates, vocational concentrators and graduates completing general coursework in high school were more likely to be in the labor force in December 1993 than were their college preparatory peers (83 percent and 80 percent versus 63 percent, respectively) (table 75). Among labor force participants, all curriculum-based groups had similar employment and unemployment rates. Although vocational concentrators who also completed a college preparatory curriculum appeared to have a lower unemployment rate than that of other groups, the differences were not statistically significant.

Table 75—Percentage distribution of 1992 public high school graduates according to their employment status in December 1993, by curriculum specialization and work experience in high school

Curriculum specialization and work experience	In labor force	Of those in labor force	
		Employed	Unemployed
Total	75.5	91.4	8.6
Curriculum specialization in high school			
College preparatory only	63.4	91.4	8.6
Vocational concentrators total*	82.8	93.3	6.7
Vocational concentration only	84.4	93.0	7.0
Both vocational concentration and college preparatory	73.3	95.6	4.4
Other/general	79.5	90.2	9.8
High school work experience			
None	67.0	86.0	14.0
Worked part time	77.6	93.0	7.0
Worked full time	85.8	92.0	8.0

*Includes students who completed both a vocational concentration and a college preparatory curriculum.

NOTE: Percentages may not add to 100 due to rounding. Row n's may not add to total n's because of missing data.

SOURCE: U.S. Department of Education, National Center for Education Statistics, National Education Longitudinal Study of 1988, Third Follow-up and High School Transcript Study.

- Among 1982 public high school graduates, vocational concentrators were more likely to be in the labor force in February 1984 than were either their other/general or college preparatory counterparts (81 percent versus 71 percent and 59 percent, respectively) (table 76). Among labor force participants, vocational concentrators and other/general graduates had higher unemployment rates than those of their college preparatory peers (7 percent and 6 percent, respectively, versus 2 percent). This contrasts with the experience of 1992 public high school graduates when all groups had statistically similar unemployment rates one and a half years after graduation. This difference may be due to changes over the decade in economic conditions or in the academic preparation of high school graduates, or other factors.

- Among 1992 vocational concentrators who were in the labor force in December 1993, unemployment rates appeared to vary by vocational program area (table 77). Specifically, graduates who concentrated in technology and communications, agriculture, and trade and industry appeared to have higher unemployment rates than those in marketing and distribution, health care, occupational home economics, and business. However, these differences were not statistically significant.[95]

- Among 1982 and 1992 public high school graduates who were in the labor force 2 years after graduation, those with no work experience in high school had higher unemployment rates than those with part-time work experience, but they had similar unemployment rates as those employed full time in high school[96] (tables 75 and 76).

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[95] These groups had small sample sizes and large standard errors.

[96] Although 1982 and 1992 graduates with no work experience in high school appeared to have higher unemployment rates than those working 35 or more hours per week and those working full time, respectively, these differences were not statistically significant.

Table 76—Percentage distribution of 1982 public high school graduates according to their employment status in February 1984, by curriculum specialization and hours worked per week in high school

Curriculum specialization and hours worked	Of all graduates						Percent of time in labor force	
	Employed				Not in			
	Total	Full-time	Part-time	Unemployed	labor force	In labor force	Employed	Unemployed
Total	68.5	39.1	29.3	4.5	27.1	72.9	93.9	6.1
Curriculum specialization in high school								
College preparatory only	58.2	22.3	36.0	1.0	40.8	59.2	98.3	1.7
Vocational concentrators total*	75.1	49.8	25.2	5.4	19.5	80.5	93.3	6.7
Vocational concentration only	75.1	50.2	24.9	5.4	19.5	80.5	93.3	6.8
Both vocational concentration and college preparatory	76.1	31.5	44.5	3.1	20.8	79.2	96.0	4.0
Other/general	66.1	35.3	30.8	4.4	29.5	70.5	93.7	6.3
Hours worked per week in high school								
None	60.5	33.3	27.1	6.7	32.9	67.1	90.1	9.9
1–14	68.8	36.4	32.4	3.5	27.7	72.3	95.2	4.8
15–34	74.0	43.6	30.4	2.8	23.2	76.8	96.4	3.6
35 or more	75.7	56.8	18.9	7.1	17.2	82.8	91.4	8.6

*Includes students who completed both a vocational concentration and a college preparatory curriculum.

NOTE: Percentages may not add to totals due to rounding.

SOURCE: U.S. Department of Education, National Center for Education Statistics, High School and Beyond Sophomore Cohort 1982 High School Transcript Study and Fourth Follow-up Survey.

Table 77—Percentage distribution of 1992 public high school graduates according to their employment status in December 1993, by program area of high school vocational concentration

Vocational concentration program area[1]	In labor force	Percent of time in labor force	
		Employed	Unemployed
Total	75.5	91.4	8.6
No concentration	73.1	90.7	9.4
Agriculture and renewable resources	82.9	90.9	9.1
Business	81.8	94.7	5.3
Marketing and distribution	83.3	96.5	3.5
Health care	60.7	94.8	5.2
Public and protective services	—	—	—
Trade and industry	86.3	92.1	7.9
Technology and communications	80.2	92.5	7.5
Occupational home economics[2]	77.5	95.1	4.9
Personal and other services	77.2	95.5	4.5
Food service and hospitality	—	—	—
Child care and education	79.0	—	—

— Too few sample observations for a reliable estimate.

[1] Vocational concentrators earned 3 or more credits in a single vocational program area.

[2] Occupational home economics combines personal and other services, food service and hospitality, and child care and education.

NOTE: Percentages may not add to 100 due to rounding. Row n's may not add to total n's because of missing data.

SOURCE: U.S. Department of Education, National Center for Education Statistics, National Education Longitudinal Study of 1988, Third Follow-up and High School Transcript Study.

Labor Market Outcomes 10 Years After High School

Vocational concentrators and other/general students had similar labor market experiences 10 years after graduation from high school. While the number of months employed and unemployed was similar regardless of one's course of study in high school, college preparatory graduates tended to enjoy higher earnings in 1991 than their peers, possibly because of their greater postsecondary attainment. Obtaining a bachelor's degree was generally associated with increased earnings and lower unemployment rates. At the other end of the educational spectrum, students who earned a postsecondary certificate had similar annual earnings and unemployment rates as their peers who did not complete a postsecondary degree or certificate. Furthermore, both postsecondary certificate and high school diploma holders earned less and were more likely to be unemployed in 1991 than graduates who earned an associate's degree or higher.

- During 1991, 1982 public high school graduates spent, on average, 11 out of 12 months, or 91 percent of their time, in the labor force (table 78). These figures were basically the same regardless of graduates' course of study in high school. Among labor force participants, the percent of time spent unemployed was also similar regardless of course of study in high school.

- Among 1982 public high school graduates who were in the labor force, percent of time spent unemployed during 1991 decreased as postsecondary attainment increased (table 79). Specifically, percent of time unemployed for graduates without a postsecondary degree or certificate was 6 percent, while the percent of time unemployed for graduates with a certificate, associate's degree, and bachelor's degree was 4 percent, 3 percent, and 3 percent, respectively.

- For 1982 public high school graduates who were in the labor force, work experience in high school was inversely related to percent of time spent unemployed 10 years later (table 79). In particular, the percent of time in the labor force spent unemployed during 1991 decreased steadily as the number of hours graduates worked per week in high school increased—ranging from 5 percent of time spent unemployed for those with no work experience to 3 percent for those with full-time employment (35 or more hours per week) during high school.

Table 78—Average number and percentage distribution of months according to employment status in 1991 for 1982 public high school graduates, by curriculum specialization in high school

	Average number of months			Percent of months		
	In labor force		Not in labor force		Percent of time in labor force	
Curriculum specialization	Employed	Unemployed		In labor force	Employed	Unemployed
Total	10.43	0.52	1.05	91.3	95.2	4.8
College preparatory only	10.56	0.37	1.07	91.1	96.7	3.4
Vocational concentrators total*	10.51	0.52	0.96	92.0	95.3	4.8
Vocational concentration only	10.52	0.53	0.95	92.1	95.2	4.8
Both vocational concentration and college preparatory	9.93	0.24	1.83	84.7	97.7	2.3
Other/general	10.37	0.54	1.09	90.9	95.0	5.0

*Includes students who completed both a vocational concentration and a college preparatory curriculum.

NOTE: Averages and percentages may not add to totals due to rounding.

SOURCE: U.S. Department of Education, National Center for Education Statistics, High School and Beyond Sophomore Cohort 1982 High School Transcript Study and Fourth Follow-up Survey.

Table 79—Average number and percentage distribution of months according to employment status in 1991 for 1982 public high school graduates, by hours worked in high school and degree attainment by 1992

	Average number of months			Percent of months		
	In labor force				Percent of time in labor force	
Hours worked and degree attainment	Employed	Unemployed	Not in labor force	In labor force	Employed	Unemployed
Total	10.43	0.52	1.05	91.3	95.2	4.8
Hours worked per week in high school						
None	10.16	0.57	1.27	89.4	94.6	5.4
1–14	10.37	0.55	1.09	91.0	95.0	5.0
15–34	10.63	0.47	0.90	92.5	95.7	4.3
35 or more	11.00	0.37	0.63	94.7	96.8	3.2
Degree attainment by 1992						
None	10.18	0.63	1.19	90.1	94.1	5.9
Any degree or certificate	10.84	0.35	0.81	93.2	96.9	3.2
Certificate	10.82	0.49	0.69	94.2	95.7	4.3
Associate's degree	10.99	0.37	0.65	94.6	96.8	3.2
Bachelor's degree or higher	10.80	0.32	0.88	92.7	97.1	2.9

NOTE: Averages and percentages may not add to totals due to rounding.

SOURCE: U.S. Department of Education, National Center for Education Statistics, High School and Beyond Sophomore Cohort 1982 High School Transcript Study and Fourth Follow-up Survey.

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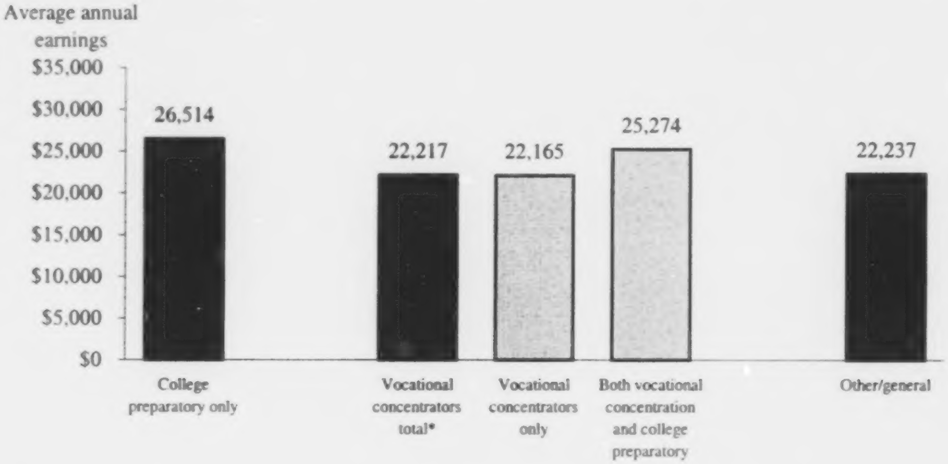
- Among 1982 vocational concentrators who were in the labor force in December 1991, unemployment rates appeared to vary by vocational program area (table 80). For example, graduates who concentrated in technology and communications, trade and industry, and agriculture appeared to have lower unemployment rates than concentrators in most other fields and graduates who concentrated in health care appeared to have a higher unemployment rate than concentrators in other fields. However, these differences were not statistically significant; there were small sample sizes and large standard errors for these groups. This finding was similar to that for 1992 graduates 2 years after high school graduation.

- Among 1982 public high school graduates, college preparatory graduates had higher annual earnings in 1991 (about $26,500) than those of their vocational concentrator and other/general peers, who earned approximately the same amount (about $22,000) (table 81; figure 30). In 1991, vocational concentrators who also completed a college preparatory curriculum appeared to earn, on average, about $3,000 more during the year than both their strictly vocational and other/general peers. However, these differences were not statistically significant. Vocational concentrators who also completed a college preparatory curriculum had a small sample size and large standard errors.

Figure 30—Average annual earnings in 1991 for 1982 public high school graduates, by curriculum specialization in high school



*Includes students who completed both a vocational concentration and a college preparatory curriculum.

SOURCE: U.S. Department of Education, National Center for Education Statistics, High School and Beyond Sophomore Cohort 1982 High School Transcript Study and Fourth Follow-up Survey.

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Table 80—Percentage distribution of 1982 public high school graduates according to their employment status in December 1991, by program area of high school vocational concentration

	Of all graduates					
	In labor force			Not in labor force	Percent of time in labor force	
Vocational concentration program area[1]	Total	Employed	Unemployed		Employed	Unemployed
Total	91.2	86.5	4.7	8.8	94.8	5.2
No concentration	91.1	86.2	4.9	8.9	94.6	5.4
Agriculture and renewable resources	93.4	90.0	3.4	6.6	96.4	3.6
Business	86.6	81.5	5.1	13.4	94.1	5.9
Marketing and distribution	85.1	80.6	4.5	14.9	94.7	5.3
Health care	88.7	70.3	18.4	11.4	79.3	20.7
Public and protective services	—	—	—	—	—	—
Trade and industry	96.8	93.7	3.1	3.2	96.8	3.2
Technology and communications	98.1	93.8	4.4	1.9	95.6	4.5
Occupational home economics[2]	82.5	75.1	7.5	17.5	91.0	9.0
Personal and other services	79.4	71.6	7.8	20.6	90.1	9.9
Food service and hospitality	—	—	—	—	—	—
Child care and education	—	—	—	—	—	—

—Too few sample observations for a reliable estimate.

[1] Vocational concentrators earned 3 or more credits in a single vocational program area.

[2] Occupational home economics combines personal and other services, food service and hospitality, and child care and education.

NOTE: Percentages may not add to 100 due to rounding.

SOURCE: U.S. Department of Education, National Center for Education Statistics, High School and Beyond Sophomore Cohort 1982 High School Transcript Study and Fourth Follow-up Survey.

Table 81—Average annual and monthly earnings in 1991 for 1982 public high school graduates, by curriculum specialization in high school

Curriculum specialization	Average anuual earnings[1]	Average monthly earnings[2]
Total	$22,597	$1,983
College preparatory only	26,514	2,300
Vocational concentrators total[3]	22,217	1,925
Vocational concentration only	22,165	1,920
Both vocational concentration and college preparatory	25,274	2,176
Other/general	22,237	1,970

[1] Average annual earnings are for all 12 months in 1991, regardless of how many months the graduate was actually employed in 1991.

[2] Average monthly earnings includes the earnings for only those months that the graduate was employed during 1991.

[3] Includes students who completed both a vocational concentration and a college preparatory curriculum.

SOURCE: U.S. Department of Education, National Center for Education Statistics, High School and Beyond Sophomore Cohort 1982 High School Transcript Study and Fourth Follow-up Survey.

- Among 1982 public high school graduates, men spent more time in the labor force in 1991 than did women (11.6 months versus 10.4 months) (tables 82a,b). Female 1982 graduates also spent a greater percent of their time in the labor force unemployed in 1991 than did male graduates (7 percent versus 3 percent). Male vocational concentrators were similar to male college preparatory and other/general graduates in terms of labor force participation rates and percent of time in the labor force spent unemployed. Among female graduates, there were no significant differences in labor force participation rates between vocational concentrators and college preparatory and other/general graduates. Although female vocational concentrators appeared to spend almost twice as much of their time in the labor force unemployed as female college preparatory graduates, this difference was not statistically significant.[97]

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[97] Standard errors for female graduates were generally larger than for their male counterparts for the same columns and rows in tables 82a and 82b. This suggests that variability in labor market experiences was greater for female than male graduates.

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Table 82a—Average number and percentage distribution of months according to employment status in 1991 for 1982 public high school male graduates, by curriculum specialization in high school and degree attainment by 1992

Curriculum specialization and degree attainment	Average number of months			Percent of months		
	In labor force		Not in labor force		Percent of time in labor force	
	Employed	Unemployed		In labor force	Employed	Unemployed
Total	11.28	0.31	0.41	96.6	97.3	2.7
Curriculum specialization in high school						
College preparatory only	11.20	0.24	0.56	95.3	97.9	2.1
Vocational concentrators total*	11.41	0.27	0.32	97.3	97.7	2.3
Vocational concentration only	11.42	0.27	0.31	97.4	97.7	2.3
Both vocational concentration and college preparatory	—	—	—	—	—	—
Other/general	11.21	0.35	0.45	96.3	96.9	3.1
Degree attainment by 1992						
None	11.35	0.33	0.31	97.4	97.1	2.9
Any degree or certificate	11.16	0.26	0.57	95.2	97.6	2.4
Certificate	11.51	0.31	0.18	98.5	97.4	2.6
Associate's degree	11.41	0.29	0.30	97.5	97.5	2.5
Bachelor's degree or higher	11.05	0.25	0.70	94.2	97.7	2.3

—Too few sample observations for a reliable estimate.

*Includes students who completed both a vocational concentration and a college preparatory curriculum.

NOTE: Averages and percentages may not add to totals due to rounding.

SOURCE: U.S. Department of Education, National Center for Education Statistics, High School and Beyond Sophomore Cohort 1982 High School Transcript Study and Fourth Follow-up Survey.

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Table 82b—Average number and percentage distribution of months according to employment status in 1991 for 1982 public high school female graduates, by curriculum specialization in high school and degree attainment by 1992

Curriculum specialization and degree attainment	Average number of months			Percent of months		
	In labor force		Not in labor force	In labor force	Percent of time in labor force	
	Employed	Unemployed			Employed	Unemployed
Total	9.65	0.72	1.63	86.4	93.1	6.9
Curriculum specialization in high school						
College preparatory only	10.07	0.47	1.46	87.8	95.6	4.4
Vocational concentrators total*	9.41	0.84	1.76	85.4	91.9	8.1
Vocational concentration only	9.39	0.86	1.75	85.4	91.8	8.2
Both vocational concentration and college preparatory	9.99	0.06	1.95	83.8	99.5	0.5
Other/general	9.70	0.70	1.60	86.7	93.3	6.7
Degree attainment by 1992						
None	9.02	0.92	2.06	82.8	90.9	9.2
Any degree or certificate	10.57	0.42	1.00	91.7	96.2	3.8
Certificate	10.41	0.59	1.00	91.7	94.7	5.3
Associate's degree	10.73	0.41	0.85	92.9	96.4	3.6
Bachelor's degree or higher	10.57	0.38	1.05	91.3	96.5	3.5

—Too few sample observations for a reliable estimate.

*Includes students who completed both a vocational concentration and a college preparatory curriculum.

NOTE: Averages and percentages may not add to totals due to rounding.

SOURCE: U.S. Department of Education, National Center for Education Statistics, High School and Beyond Sophomore Cohort 1982 High School Transcript Study and Fourth Follow-up Survey.

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- On average, male 1982 public high school graduates earned about $25,500 in 1991 (table 83). Among these male graduates, college preparatory graduates had higher earnings (about $30,000) than vocational concentrators and other/general graduates, who earned about the same amount (about $25,000). In comparison, female 1982 public high school graduates earned, on average, about $19,500 in 1991. Among these female graduates, vocational concentrators earned the least (about $18,000), followed by other/general graduates (about $20,000). Female college preparatory graduates enjoyed the highest annual earnings (about $23,000).

Table 83—Average annual and monthly earnings in 1991 for 1982 public high school graduates, by sex, curriculum specialization in high school, and degree attainment by 1992

	Male		Female	
Curriculum specialization and degree attainment	Average annual earnings[1]	Average monthly earnings[2]	Average annual earnings[1]	Average monthly earnings[2]
Total	$25,494	$2,190	$19,508	$1,761
Curriculum specialization in high school				
College preparatory only	30,198	2,622	23,278	2,017
Vocational concentrators total[3]	25,203	2,142	17,777	1,601
Vocational concentration only	25,181	2,139	17,606	1,589
Both vocational concentration and college preparatory	—	—	—	—
Other/general	25,019	2,163	19,719	1,794
Degree attainment by 1992				
None	24,140	2,061	16,738	1,550
Any degree or certificate	27,868	2,417	22,932	2,022
Certificate	23,382	1,990	19,305	1,707
Associate's degree	23,503	2,014	22,827	1,949
Bachelor's degree or higher	29,506	2,571	23,841	2,121

—Too few sample observations for a reliable estimate.

[1] Average annual earnings are for all 12 months in 1991, regardless of how many months the graduate was actually employed in 1991.

[2] Average monthly earnings includes the earnings for only those months that the graduate was employed during 1991.

[3] Includes students who completed both a vocational concentration and a college preparatory curriculum.

SOURCE: U.S. Department of Education, National Center for Education Statistics, High School and Beyond Sophomore Cohort 1982 High School Transcript Study and Fourth Follow-up Survey.

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- Among 1982 public high school graduates, annual earnings in 1991 increased with degree attainment (table 84). Specifically, graduates with no postsecondary degree or certificate and those with a postsecondary certificate earned about $21,000, and associate's degree holders $23,000, while bachelor's degree holders earned $27,000. Obtaining a postsecondary certificate did not increase earnings measurably over holding a high school diploma for this graduating class.

Table 84—Average annual and monthly earnings in 1991 for 1982 public high school graduates, by hours worked in high school and degree attainment by 1992

Hours worked and degree attainment	Average annual earnings[1]	Average monthly earnings[2]
Total	$22,597	$1,983
Hours worked per week in high school		
None	21,559	1,922
1–14	22,088	1,917
15–34	23,408	2,060
35 or more	23,557	2,015
Degree attainment by 1992		
None	20,819	1,832
Any degree or certificate	25,223	2,206
Certificate	20,959	1,822
Associate's degree	23,092	1,974
Bachelor's degree or higher	26,643	2,344

[1] Average annual earnings are for all 12 months in 1991, regardless of how many months the graduate was actually employed in 1991.

[2] Average monthly earnings includes the earnings for only those months that the graduate was employed during 1991.

SOURCE: U.S. Department of Education, National Center for Education Statistics, High School and Beyond Sophomore Cohort 1982 High School Transcript Study and Fourth Follow-up Survey.

VI. Trends in Postsecondary Vocational Education

OVERVIEW

This chapter describes trends in participation in postsecondary vocational education from 1990 to 1996. The data sets used in the analysis include the following:

- *Current Population Surveys (CPS)* of 1990, 1991, 1994, and 1996, October supplements (describing adults in the general U.S. population)[98]

- *National Postsecondary Student Aid Studies (NPSAS)* of 1990 and 1996 (describing students enrolled for credit in postsecondary institutions)[99]

- *Beginning Postsecondary Students (BPS) Longitudinal Survey* of 1990, Base Year through Second Follow-up (describing outcomes for students enrolled for credit in postsecondary institutions for the first time in 1989–90, 4 years later in 1994)

The first set of surveys (CPS) provides an overview of the postsecondary attainment status of adults aged 18–64 in the general U.S. population and their recent participation in postsecondary education. The second set of surveys (NPSAS) forms the foundation of the trend analysis in this chapter. NPSAS contains information on a representative sample of all students enrolled for credit in postsecondary institutions during the surveyed year. It does not include students taking not-for-credit "adult" or "continuing" education courses; nor does it include transcript data. The survey relies instead on information from student self-reports and from institutional records about the degrees and majors students are pursuing, among other factors. The BPS survey provides longitudinal data on students who were enrolled for credit for the first time in 1989-90. In particular, the survey provides information on postsecondary enrollment and completion and some labor market outcomes as of 1994, relying on student self-reported information. Because recent postsecondary transcript data were not available for this analysis, the information on trends at the postsecondary level is generally less detailed than that at the secondary level.[100]

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[98] The specific data elements that were available differed somewhat for each year of the survey.

[99] The first NPSAS survey in 1987 did not survey a comparable sample of students, so the trend analysis focuses on 1990 to 1996.

[100] The High School and Beyond (HS&B) longitudinal study collected postsecondary transcript data for 1982 high school graduates. More recent postsecondary transcript data are not currently available.

Specifically, it was not possible to examine students' actual course-taking patterns in this chapter.

Because of the federal definition of vocational education, the analysis in this chapter focuses primarily on subbaccalaureate students, based on student reports of the degrees they were pursuing at the time of the survey.[101] Undergraduate students who reported that they were pursuing either an associate's degree or certificate, or were not in a degree program, were included in the analysis.[102] In addition, data on major field were collected directly from NPSAS students and from their institutional records; these data were then coded into categories (about 100 categories for the 1995–96 survey and about 50 categories for the 1989–90 survey). In order to classify students as either "academic" or "vocational" for comparative analysis, these fields were collapsed using the taxonomy provided in figure 2 in the Introduction. All reported majors were classified as either academic or vocational. Students for whom major field information was not known were placed in a category called "major not reported."[103]

Unlike at the high school level, vocational education at the postsecondary level is provided extensively by both public and private institutions. In total, six types of postsecondary institutions are included in the analysis in this chapter:

- public 4-year institutions
- public 2-year institutions (sometimes referred to as "community colleges")
- public less-than-2-year institutions (sometimes referred to as "vocational–technical institutes")
- private, not-for-profit 4-year institutions
- private, not-for-profit 2-year institutions (which includes all private, not-for-profit less-than-4-year institutions)
- private, for-profit institutions

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[101] In the analyses focusing on beginning postsecondary students (primarily in the Postsecondary Completion and Other Outcomes section), we included students who reported pursuing 4-year degrees in 1989–90, in order to compare outcomes for students working toward baccalaureate and subbaccalaureate credentials.

[102] The surveys generally did not specify the types of postsecondary certificates students were pursuing. For purposes of this report, all reported certificates were generally treated as subbaccalaureate certificates. However, some 4-year and postbaccalaureate certificates (such as teaching certificates) may be included.

[103] The previous report in this series, *Vocational Education in the United States: The Early 1990s*, called this third category of majors "other" rather than "not reported."

The designation "4-year" means that the institution awards bachelor's or graduate degrees as its highest degree type. The designation "2-year" means the institution awards associate's degrees or less-than-4-year, subbaccalaureate certificates as its highest award type. The designation "less-than-2-year" means that the institution does not award degrees but awards subbaccalaureate certificates of less than 2 years in length. Private, for-profit institutions usually offer certificates but may offer other degrees as well.

TRENDS IN EDUCATIONAL ATTAINMENT

The United States has experienced both greater educational participation and higher attainment in recent years, continuing long-standing patterns. More people are attending postsecondary institutions than ever before, and the average educational attainment of the adult population (those 18 and older) has been steadily rising.

- The average educational attainment of the adult U.S. population (those 18 and older) increased between 1992 and 1996 (table 85; figure 31). The number of adults with less than a high school diploma decreased by 5 percent (about 2 million people) from 1992 to

Table 85—Percentage distribution and number of adults aged 18 or older according to highest educational attainment: 1992 and 1996

	Of all adults 18 or older				Of those who completed a degree*				
					Associate's				
	Less than high schoo	High school only	Some college, no degree*	College degree*	Total	Vocational	Academic	Bachelor's	Master's or higher
					1992				
Total percentage of adults	19.4	35.3	18.8	26.5	24.2	13.5	10.7	50.8	25.0
Total number of adults (in 1000s)	36,043	65,505	34,863	49,060	11,864	6,628	5,235	24,932	12,265
					1996				
Total percentage of adults	17.6	33.8	19.8	28.9	24.1	12.5	11.6	52.0	23.9
Total number of adults (in 1000s)	34,089	65,349	38,233	55,815	13,431	6,977	6,455	29,036	13,347

*The surveys did not ask specifically about postsecondary certificate completion. It is, therefore, not possible to know whether adults completing a postsecondary certificate, but not an associate's or higher degree, include themselves in the "some college, no degree" or "college degree" category.

NOTE: Percentages may not add to 100 due to rounding.

SOURCE: U.S. Department of Commerce, Bureau of the Census, October Current Population Surveys, 1992 and 1996.

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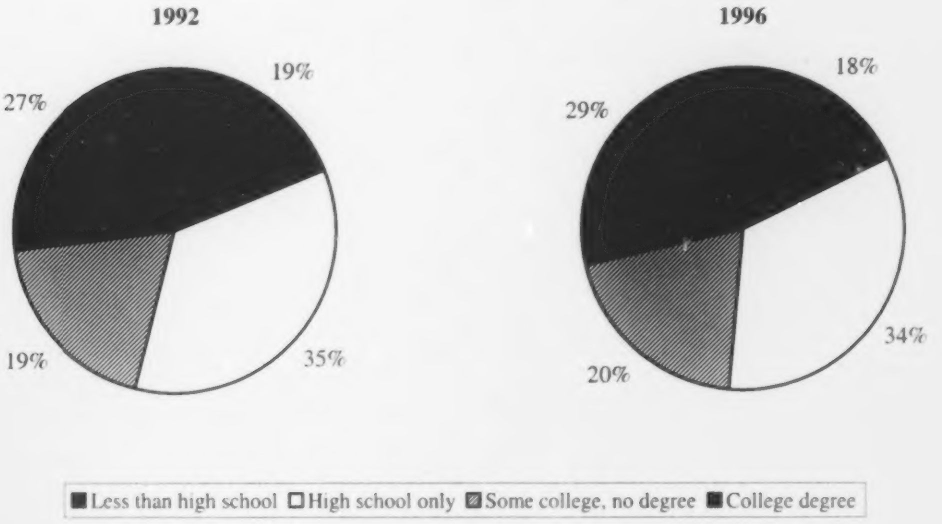
Figure 31—Percentage distribution of adults aged 18 or older according to highest educational attainment: 1992 and 1996



NOTE: Percentages may not add to 100 due to rounding.

SOURCE: U.S. Department of Commerce, Bureau of the Census, October Current Population Surveys, 1992 and 1996.

1996. In contrast, the number of adults with some college education increased by 10 percent (about 3 million people), and the number of those who earned a college degree increased by 14 percent (close to 7 million additional people).[104] These changes should be viewed in the context of an overall population increase of about 4 percent during the same time period.

- Among adults who completed a college degree, the percentage who held associate's degrees remained fairly steady at about 24 percent between 1992 and 1996 (table 85). While there appeared to be a small increase in the total number of adults who earned vocational associate's degrees, this difference was not statistically significant. However, the total number of adults who held academic associate's degrees increased between 1992 and 1996 by approximately an additional 1 million people.

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[104] The CPS surveys did not ask specifically about postsecondary certificate completion. It is, therefore, not possible to know whether adults completing a postsecondary certificate, but not an associate's or higher degree, included themselves in the "some college, no degree" or "college degree" category.

- In 1996, slightly more men than women had completed a college degree (30 percent versus 28 percent) (table 86). This difference was due to a higher proportion of men having bachelor's or advanced degrees. Women, on the other hand, were somewhat more likely than men to have earned an associate's degree (8 percent versus 6 percent). This gender gap held for both academic and vocational associate's degrees.

- Educational attainment differed by race–ethnicity in 1996. For example, substantial differences appeared in the proportion of adults completing a college degree, with 32 percent of whites, 19 percent of blacks, and 14 percent of Hispanics doing so (table 86).[105] Differences were modest in 1996 in terms of the percentages of adults who had earned associate's degrees: 8 percent of whites, 6 percent of blacks, and 4 percent of Hispanics had this level of attainment.[106]

Table 86—Percentage distribution of adults aged 18 or older according to highest educational attainment, by sex and race–ethnicity: 1996

	Of all adults 18 or older				Of those who completed a degree[1]				
					Associate's				
Sex and race–ethnicity	Less than high school	High school only	Some college, no degree[1]	College degree[1]	Total	Vocational	Academic	Bachelor's	Master's or higher
Total	17.6	33.8	19.8	28.9	6.9	3.6	3.3	15.0	6.9
Sex									
Male	17.5	32.6	19.6	30.2	6.2	3.2	3.0	15.8	8.3
Female	17.7	34.9	19.9	27.6	7.6	4.0	3.7	14.3	5.6
Race–ethnicity[2]									
Black, non-Hispanic	23.8	36.2	21.5	18.5	5.5	2.6	2.9	9.1	3.8
Hispanic	43.8	28.0	14.5	13.6	4.4	2.3	2.1	6.7	2.6
White, non-Hispanic	13.5	34.6	20.2	31.7	7.5	4.0	3.5	16.6	7.7

[1] The surveys did not ask specifically about postsecondary certificate completion. It is, therefore, not possible to know whether adults completing a postsecondary certificate, but not an associate's or higher degree, include themselves in the "some college, no degree" or "college degree" category.

[2] Non-Hispanic adults who are neither black nor white are included in the total row but not shown separately.

NOTE: Percentages may not add to 100 due to rounding.

SOURCE: U.S. Department of Commerce, Bureau of the Census, October Current Population Survey, 1996.

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[105] All differences among the three groups were statistically significant.

[106] The differences between whites and blacks and whites and Hispanics were statistically significant, but the difference between blacks and Hispanics was not.

TRENDS IN POSTSECONDARY ENROLLMENT

Vocational coursework is a substantial component of subbaccalaureate students' education. Among all subbaccalaureate students, about one-half majored in a vocational program area in 1996; the proportion decreased from 54 to 49 percent over the 6 years from 1990 to 1996.[107]

Although postsecondary enrollments overall have shown recent increases, there is no evidence that bachelor's degree holders are returning in large numbers for additional undergraduate schooling, as some have speculated. In particular, small proportions of students who were pursuing associate's degrees or certificates had already earned a bachelor's or advanced degree. The vast majority of students who enroll in postsecondary education are pursuing a higher level credential than the one they currently possess. However, this report focused on students participating in for-credit postsecondary programs. It may be that a significant number of bachelor's degree holders are taking noncredit, "adult" or "continuing" education courses.

There was an increase between 1990 and 1996 in the proportion of all vocational students being served by community colleges, with a corresponding decrease at private proprietary institutions.

- About 8 percent of adults age 18 and older in the United States were enrolled in postsecondary courses in October 1994, nearly all of them working toward a degree (94 percent) (table 87). About 4 percent of enrolled adults were working toward a license, diploma, or certificate; 22 percent toward an associate's degree; and 68 percent toward a bachelor's or advanced degree.[108]

- In 1994, the 22 percent of postsecondary students who were seeking an associate's degree were split about evenly between vocational and academic majors (table 87). The percentage of adults seeking a vocational associate's degree declined somewhat since 1991, from about 14 to 11 percent, while the percentage seeking an academic associate's degree rose from 9 to 11 percent.

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[107] There were substantial amounts of missing data on student's major field in both NPSAS surveys. About 24 percent of subbaccalaureate students in 1990 and 28 percent in 1996 did not report their major field.

[108] The CPS surveys did not specify whether the postsecondary certificates students were pursuing were subbaccalaureate certificates or 4-year or post-baccalaureate certificates (such as teaching certificates).

Table 87—Percentage distribution of adults aged 18 or older according to postsecondary enrollment and degree-seeking status, by sex and race–ethnicity: 1991 and 1994

		Of those enrolled						
			Working toward a degree					
					Associate's-			
Sex and race–ethnicity	Enrolled in post-secondary	Not working toward a degree	Total	License, diploma, or certificate	Total	Vocational	Academic	Bachelor's or higher
				1991				
Total	7.6	6.4	93.6	4.9	22.3	13.8	8.5	66.4
Sex								
Male	7.3	5.6	94.4	4.0	20.9	12.6	8.3	69.5
Female	7.8	7.1	92.9	5.8	23.4	14.7	8.7	63.7
Race–ethnicity*								
Black, non-Hispanic	7.0	5.2	94.8	7.1	30.3	21.4	9.0	57.4
Hispanic	5.8	8.3	91.7	5.5	30.8	18.6	12.2	55.4
White, non-Hispanic	7.6	6.4	93.6	4.7	20.9	12.9	8.1	68.0
				1994				
Total	7.8	5.8	94.2	4.2	21.7	10.5	11.2	68.3
Sex								
Male	7.4	5.2	94.8	3.5	19.3	8.7	10.6	72.1
Female	8.2	6.3	93.7	4.8	23.7	12.0	11.7	65.2
Race–ethnicity*								
Black, non-Hispanic	8.1	6.8	93.2	4.8	23.4	14.4	9.0	65.0
Hispanic	6.8	8.3	91.7	5.1	32.1	13.0	19.1	54.5
White, non-Hispanic	7.6	5.4	94.6	4.2	20.7	9.9	10.7	69.7

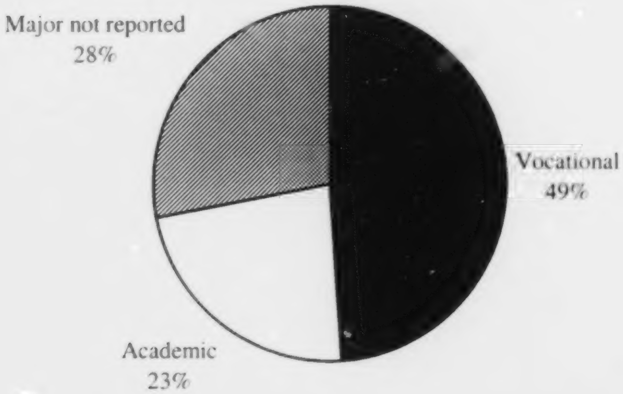
*Non-Hispanic adults who are neither black nor white are included in the total row but not shown separately.

NOTE: Percentages may not add to 100 due to rounding.

SOURCE: U.S. Department of Commerce, Bureau of the Census, October Current Population Surveys, 1991 and 1994.

- About one-half of all subbaccalaureate students reported majoring in a vocational field in 1995–96 (figure 32). The proportion of all subbaccalaureate students who declared a vocational major decreased slightly, from 54 percent in 1989–90 to 49 percent in 1995–96 (table 88).[109]

Figure 32—Percentage distribution of subbaccalaureate students majoring in an academic, vocational, or unreported field: 1995–96



SOURCE: U.S. Department of Education, National Center for Education Statistics, 1995–96 National Postsecondary Student Aid Study.

Table 88—Percentage distribution of subbaccalaureate students majoring in an academic, vocational, or unreported field, by sex: 1989–90 and 1995–96

	1989–90			1995–96		
Sex	Academic	Vocational	Major not reported	Academic	Vocational	Major not reported
Total	21.8	54.3	23.9	22.6	49.2	28.2
Male	21.7	54.7	23.6	19.8	49.2	31.1
Female	23.1	51.9	25.0	24.5	49.3	26.2

NOTE: Percentages may not add to 100 due to rounding.

SOURCE: U.S. Department of Education, National Center for Education Statistics, 1989–90 and 1995–96 National Postsecondary Student Aid Study.

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[109] There were substantial amounts of missing data on student's major field in both NPSAS surveys. About 24 percent of subbaccalaureate students in 1989–90 and 28 percent in 1995–96 did not report their major field.

- In 1995–96, 20 percent of subbaccalaureate students held a previous postsecondary degree or certificate, and 2 percent held a bachelor's or higher degree (table 89). Among community college students, 19 percent held a previous postsecondary degree or certificate, and 1 percent held a bachelor's or higher degree. Whether subbaccalaureate students had previously earned a baccalaureate degree did not differ by students' major: 2 percent of academic majors and 1 percent of vocational majors had bachelor's or advanced degrees. Among previous degree holders, certificate seekers were about twice as likely as associate's degree seekers to hold a bachelor's or advanced degree in 1995–96 (12 versus 6 percent). About one-third of subbaccalaureate students who were not pursuing a degree or certificate held a bachelor's or advanced degree in 1995–96. (Data on prior degrees earned are not available for 1989–90.)

Table 89—Percentage distribution of subbaccalaureate students who had previously earned various degrees, by type of previous degree and selected student enrollment characteristics: 1995–96

	Of all subbaccalaureate students			Of previous degree holders	
Selected student enrollment characteristics	Any previous degree	Baccalaureate degree or higher	Subbaccalaureate degree	Baccalaureate degree or higher	Subbaccalaureate degree
Total	20.4	2.2	18.3	10.7	89.3
Institution type					
Public 4-year	28.7	14.4	14.2	50.3	49.7
Private, not-for-profit 4-year	27.1	9.6	17.5	35.5	64.5
Public 2-year	19.3	1.4	17.9	7.2	92.8
Public vocational–technical	36.0	0.7	35.2	2.0	98.0
Private, not-for-profit less-than-4-year	23.0	1.0	22.0	4.4	95.6
Private, for-profit	20.0	0.6	19.4	3.0	97.0
Major field category					
Vocational	22.6	1.2	21.4	5.4	94.6
Academic	17.1	2.0	15.1	11.9	88.1
Major not reported	19.3	4.2	15.1	21.7	78.3
Degree pursuing					
Certificate	29.7	3.4	26.3	11.5	88.5
Associate's	16.7	1.1	15.7	6.4	93.6
Nondegree program	27.7	9.4	18.2	34.0	66.0

NOTE: Percentages may not add to totals due to rounding.

SOURCE: U.S. Department of Education, National Center for Education Statistics, 1995–96 National Postsecondary Student Aid Study.

- Public 2-year institutions served a greater proportion of all subbaccalaureate students in 1995–96 than in 1989–90 (79 percent versus 67 percent) (table 90). This was true for each major field category (vocational, academic, and not reported). About 60 percent of students with vocational majors attended community colleges in 1989–90, for example, while 71 percent of them did so in 1995–96. There was a corresponding decline in attendance at private, for-profit schools: 16 percent of subbaccalaureate vocational students attended this type of school in 1995–96, down from 23 percent 6 years earlier.

Table 90—Percentage distribution of subbaccalaureate students according to type of institution, by major field category: 1989–90 and 1995–96

Major field category	Public 4-year	Private, not-for-profit 4-year	Public 2-year	Private, not-for-profit less-than-4-year	Public vocational–technical	Private, for-profit
			1989–90			
Total	10.1	4.6	67.1	2.6	2.3	13.2
Vocational	7.0	3.6	59.7	3.4	3.8	22.5
Academic	14.1	5.9	73.2	2.4	0.7	3.7
Major not reported	13.5	5.9	78.3	1.1	0.2	1.0
			1995–96			
Total	5.4	2.9	78.5	2.3	2.1	8.8
Vocational	3.4	2.0	71.0	3.5	4.0	16.1
Academic	6.2	3.9	86.3	1.4	0.4	1.8
Major not reported	8.2	3.6	85.3	0.8	0.3	1.7

NOTE: Percentages may not add to 100 due to rounding.

SOURCE: U.S. Department of Education, National Center for Education Statistics, 1989–90 and 1995–96 National Postsecondary Student Aid Study.

STUDENT CHARACTERISTICS

Subbaccalaureate students with vocational majors were older, more likely to have family responsibilities, more likely to receive financial aid, more likely to have a previous postsecondary degree or certificate, and reported higher postsecondary grade-point averages (GPAs) than their academic counterparts (figure 33). These students with vocational majors also tended to have parents with lower educational attainment: as the education level of their parents increased, students' likelihood of reporting a vocational major generally decreased. Differences by race–ethnicity among subbaccalaureate students in the probability of having a vocational major were either minimal or not statistically significant. Also, among subbaccalaureate students, there was no clear association between majoring in a vocational field and disability status.

- A slightly higher proportion of U.S. women than men were enrolled in postsecondary courses in 1994 (8 percent versus 7 percent) (table 87). Among those enrolled, women tended to be concentrated more in subbaccalaureate programs than men (29 percent versus 23 percent), and a higher percentage of women than men were earning vocational associate's degrees (12 percent versus 9 percent).

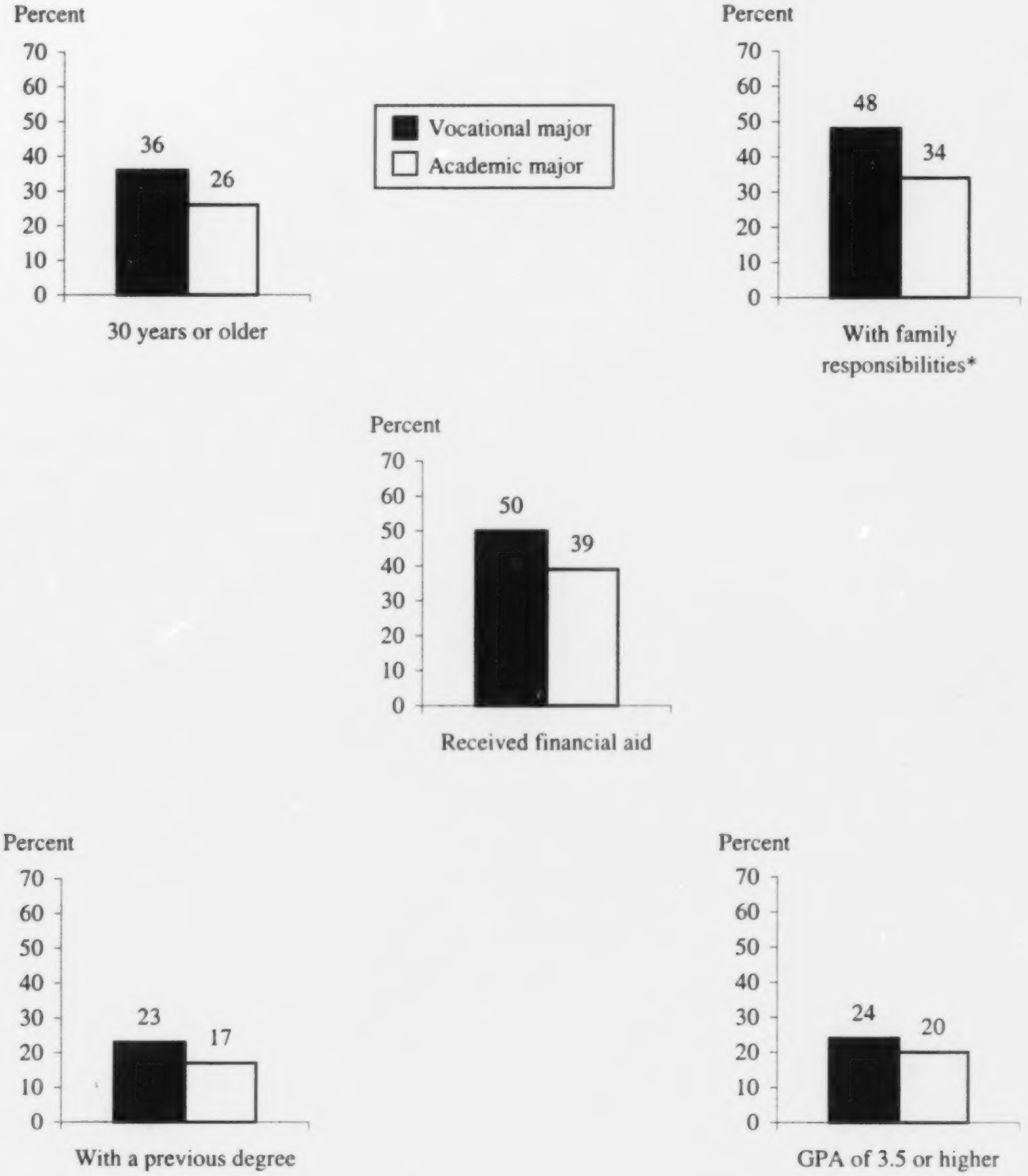
- Among subbaccalaureate students, about 58 percent of vocational majors were women in 1995–96, compared with 64 percent of academic majors (table 91). While subbaccalaureate males appeared to be slightly more likely than their female counterparts to report a vocational major in both 1989–90 and 1995–96, these small differences were not statistically significant (table 88).

Table 91—Percentage distribution of subbaccalaureate students according to sex, by major field category: 1995–96

Major field category	Male	Female
Total	41.7	58.3
Vocational	41.6	58.4
Academic	36.5	63.5
Major not reported	45.9	54.1

SOURCE: U.S. Department of Education, National Center for Education Statistics, 1995–96 National Postsecondary Student Aid Study.

Figure 33—Percentage of vocational and academic subbaccalaureate students with selected characteristics, by major: 1995–96



*Included in the figure are students who were married (with or without dependents) or unmarried with dependents.

SOURCE: U.S. Department of Education, National Center for Education Statistics, 1995–96 National Postsecondary Student Aid Study.

- Subbaccalaureate students were more likely to have vocational than academic majors in 1995–96; this pattern held for all racial–ethnic groups except American Indian/Alaska Native students, where the sample size was small (table 92). The percentage within each racial–ethnic group (except black) that had a vocational major did not differ significantly from the overall total of 49 percent.[110] About 58 percent of black students had a vocational major in 1995–96, a higher proportion than that of all subbaccalaureate students.

- Among black students, the likelihood of majoring in a vocational field decreased between 1989–90 and 1995–96 (table 92). While 68 percent of black students reported a vocational major in 1989–90, 58 percent of these students did so in 1995–96. For other racial–ethnic groups, the decrease was not statistically significant.

Table 92—Percentage distribution of subbaccalaureate students majoring in an academic, vocational, or unreported field, by race–ethnicity: 1989–90 and 1995–96

Race–ethnicity	1989–90 Academic	1989–90 Vocational	1989–90 Major not reported	1995–96 Academic	1995–96 Vocational	1995–96 Major not reported
Total	21.8	54.3	23.9	22.6	49.2	28.2
American Indian/Alaska Native	22.4	52.5	25.1	25.2	44.1	30.7
Asian/Pacific Islander	20.6	49.9	29.6	26.1	44.6	29.2
Black, non-Hispanic	15.4	67.7	16.9	21.2	57.7	21.2
Hispanic	20.7	55.8	23.5	21.2	48.4	30.3
Other	—	—	—	14.1	57.3	28.6
White, non-Hispanic	23.1	52.3	24.6	22.8	48.1	29.1

—Data not available.

NOTE: Percentages may not add to 100 due to rounding.

SOURCE: U.S. Department of Education, National Center for Education Statistics, 1989–90 and 1995–96 National Postsecondary Student Aid Study.

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[110] For simplicity's sake, this report refers to "black, non-Hispanic" students as "black" and "white, non-Hispanic" students as "white." However, it should be remembered that all Hispanic students, regardless of race, are included in the Hispanic group.

- Subbaccalaureate students with and without disabilities were equally likely to report a vocational major in 1995–96 (table 93). There was no change between 1989–90 and 1995–96 in the probability that subbaccalaureate students with and without disabilities had a vocational major. However, these estimates should be viewed with caution because of the high proportion of missing disability status data (45 percent missing data).

Table 93—Percentage distribution of subbaccalaureate students majoring in an academic, vocational, or unreported field, by disability status: 1989–90 and 1995–96

	1989–90			1995–96		
Disability status	Academic	Vocational	Major not reported	Academic	Vocational	Major not reported
Total	21.9	54.3	23.9	22.6	49.2	28.2
Has disability	22.3	51.8	25.9	23.7	49.0	27.3
No disability	22.6	52.7	24.7	24.1	50.3	25.7
Disability status not reported	20.7	57.0	22.3	20.3	47.8	31.9

NOTE: Percentages may not add to 100 due to rounding.

SOURCE: U.S. Department of Education, National Center for Education Statistics, 1989–90 and 1995–96 National Postsecondary Student Aid Study.

- Among subbaccalaureate students in 1995–96, vocational majors reported higher postsecondary GPAs than academic majors (table 94). For example, 24 percent of vocational majors reported GPAs of 3.5 or more in 1995–96, in contrast with 20 percent of academic majors. There were no consistent changes over time in the percentage of students with various GPAs who reported a vocational major.

Table 94—Percentage distribution of subbaccalaureate students according to their postsecondary grade point average (GPA), by major field category: 1989–90 and 1995–96

	GPA in 1989–90				GPA in 1995–96			
Major field category	3.5 or more	2.6–3.49	1.6–2.59	1.59 or less	3.5 or more	2.6–3.49	1.6–2.59	1.59 or less
Total	27.9	31.5	27.7	13.0	23.3	35.0	23.7	18.0
Vocational	27.6	32.1	28.1	12.2	23.7	38.9	22.9	14.5
Academic	27.7	32.6	28.2	11.4	20.2	35.4	29.4	15.0
Major not reported	28.5	29.0	26.3	16.2	25.2	28.2	20.2	26.4

NOTE: Percentages may not add to 100 due to rounding.

SOURCE: U.S. Department of Education, National Center for Education Statistics, 1989–90 and 1995–96 National Postsecondary Student Aid Study.

- Students in their late 20s were more likely to report a vocational major in 1995–96 than those aged 20 or younger. In 1995–96, while 44 percent of students 20 years or younger reported a vocational major, about 54 percent of those ages 24–29 did so (table 95). In 1995–96, 36 percent of vocational majors versus 26 percent of academic majors were 30 years or older (table 96 and figure 33). Between 1989–90 and 1995–96, the proportion of vocational students who were 20 or younger decreased, and the proportion who were 30 or older increased.

Table 95—Percentage distribution of subbaccalaureate students majoring in an academic, vocational, or unreported field, by age: 1989–90 and 1995–96

	1989–90			1995–96		
Age	Academic	Vocational	Major not reported	Academic	Vocational	Major not reported
Total	21.9	54.3	23.9	22.6	49.2	28.2
20 years or younger	24.4	51.5	24.0	28.8	44.4	26.9
21–23 years	24.6	54.2	21.2	26.9	49.9	23.2
24–29 years	20.4	56.6	23.0	21.0	53.7	25.3
30 years or older	20.7	52.0	27.3	16.6	50.1	33.3

NOTE: Percentages may not add to 100 due to rounding.

SOURCE: U.S. Department of Education, National Center for Education Statistics, 1989–90 and 1995–96 National Postsecondary Student Aid Study.

Table 96—Percentage distribution of subbaccalaureate students according to age, by major field category: 1989–90 and 1995–96

	1989–90				1995–96			
Major field category	20 years or younger	21–23 years	24–29 years	30 years or older	20 years or younger	21–23 years	24–29 years	30 years or older
Total	30.9	16.7	18.8	33.6	27.2	16.8	20.6	35.4
Vocational	30.0	17.1	20.1	32.9	24.5	17.0	22.5	36.0
Academic	33.5	18.3	17.1	31.0	34.7	20.0	19.2	26.1
Major not reported	30.3	14.5	17.7	37.5	25.9	13.8	18.5	41.8

NOTE: Percentages may not add to 100 due to rounding.

SOURCE: U.S. Department of Education, National Center for Education Statistics, 1989–90 and 1995–96 National Postsecondary Student Aid Study.

- Among subbaccalaureate students in 1995–96, vocational majors were more likely than academic majors to have a previous postsecondary degree or certificate (table 89 and figure 33). About 23 percent of vocational majors versus 17 percent of academic majors reported a previous postsecondary credential of some type.

- Among subbaccalaureate students in 1995–96, vocational majors were more likely than academic majors to receive financial aid (table 97 and figure 33). From 1989–90 to 1995–96, there was no significant change in the proportions of vocational majors receiving financial aid. In contrast, academic majors had a greater likelihood of receiving aid in 1995–96 than in 1989–90.

Table 97—Percentage distribution of subbaccalaureate students according to their financial aid status, by major field category: 1989–90 and 1995–96

	1989–90		1995–96	
Major field category	Received aid	No aid	Received aid	No aid
Total	38.1	61.9	40.7	59.3
Vocational	46.3	53.7	49.8	50.2
Academic	31.6	68.4	39.3	60.7
Major not reported	25.5	74.5	25.8	74.2

SOURCE: U.S. Department of Education, National Center for Education Statistics, 1989–90 and 1995–96 National Postsecondary Student Aid Study.

- Among subbaccalaureate students, higher proportions of vocational majors than academic majors had family responsibilities in both 1989–90 and 1995–96 (table 98). Vocational majors were generally more likely to be financially independent and to be married and/or have dependents (figure 33). These characteristics may be related to the older age of vocational majors. Between 1989–90 and 1995–96, the percentage of subbaccalaureate students who were unmarried with dependents (mainly single parents) more than doubled, from about 7 to 17 percent. This increase held for both vocational and academic majors.

Table 98—Percentage distribution of subbaccalaureate students according to their dependency and marital status, by major field category: 1989–90 and 1995–96

Major field category	1989–90						1995–96					
	Dependency status		Marital status*				Dependency status		Marital status*			
	Dependent	Independent	Not married, no dependents	Not married, with dependents	Married, no dependents	Married, with dependents	Dependent	Independent	Not married, no dependents	Not married, with dependents	Married, no dependents	Married, with dependents
Total	36.8	63.2	57.6	7.4	13.9	21.2	37.5	62.5	57.0	16.9	10.8	15.3
Vocational	34.0	66.0	54.8	9.1	14.4	21.6	33.5	66.5	52.2	20.0	10.9	16.9
Academic	42.9	57.1	63.7	5.0	11.8	19.5	47.9	52.1	66.0	14.3	8.6	11.1
Major not reported	37.3	62.7	57.7	5.9	14.7	21.7	36.1	63.9	58.2	13.7	12.4	15.7

*The data in the "Marital status" columns for 1989–90 and 1995–96 are not directly comparable due to missing data in 1989–90 on this variable (about 23 percent missing) and no missing data in 1995–96.

NOTE: Percentages may not add to 100 due to rounding.

SOURCE: U.S. Department of Education, National Center for Education Statistics, 1989–90 and 1995–96 National Postsecondary Student Aid Study.

- As the education level of their parents increased, subbaccalaureate students were generally less likely to major in vocational fields, and were more likely to major in academic fields (table 99). For example, in 1995–96, 59 percent of subbaccalaureate students whose parents had a high school diploma but no postsecondary education reported a vocational major, compared with 35 percent of those whose parents had a graduate or professional degree.

Table 99—Percentage distribution of subbaccalaureate students majoring in an academic, vocational, or unreported field, by parental education: 1995–96

Parental education	Academic	Vocational	Major not reported
Total	22.6	49.2	28.2
Less than high school	21.5	50.8	27.6
High school completion	20.5	58.8	20.7
Some trade/vocational	27.4	42.7	29.9
Some college	26.7	51.8	21.5
Bachelor's degree	28.6	44.5	26.9
Graduate degree	35.3	35.2	29.5
Not reported	19.9	45.7	34.3

NOTE: Percentages may not add to 100 due to rounding.

SOURCE: U.S. Department of Education, National Center for Education Statistics, 1995–96 National Postsecondary Student Aid Study.

SPECIFIC OCCUPATIONAL PREPARATION

This section examines student preparation in specific occupational program areas. Business, health, and technical fields continued to account for large numbers of vocational students' majors. However, between 1989–90 and 1995–96, there were small decreases in the proportion of subbaccalaureate students reporting majors in business, marketing, computers/data processing, and engineering/science technologies.

Among subbaccalaureate students, gender gaps persisted in the fields of business, health, and "other vocational" fields (where women predominated), as well as trade and industry, protective services, computers/data processing, and engineering/science technologies (where men predominated). A particularly large gap between men and women occurred in 1995–96 in engineering/science technologies, in which 12 percent of male students and only 2 percent of female students declared a major.

- Among subbaccalaureate students in 1995–96, popular vocational majors included business (about 14 percent of subbaccalaureate students reported this major); health (11 percent); and engineering/science technologies (6 percent) (table 100). Technical education as a whole, which includes computers/data processing, engineering/science technologies, and protective services, accounted for 12 percent of all subbaccalaureate majors.

- The percentage of subbaccalaureate students reporting majors in business, marketing, computers/data processing, and engineering/science technologies, declined significantly between 1989–90 and 1995–96 (table 100). Although percentages in other fields may appear to have changed, these differences were not statistically significant.

- Among subbaccalaureate students, gender gaps remained in 1995–96 in the following fields: business, health, and "other vocational" (where women predominated), as well as trade and industry, protective services, computers and data processing, and engineering/science technologies (where men predominated) (table 100 and figure 34).[111] In particular, in engineering/science technologies, the ratio of male to female majors was about 7:1 in 1995–96. However, that difference was slightly smaller than in 1990, when the ratio was about 8:1.

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[111] The "other vocational" category includes cosmetology, consumer/personal services, dental/medical technology, and legal assisting, among other miscellaneous fields.

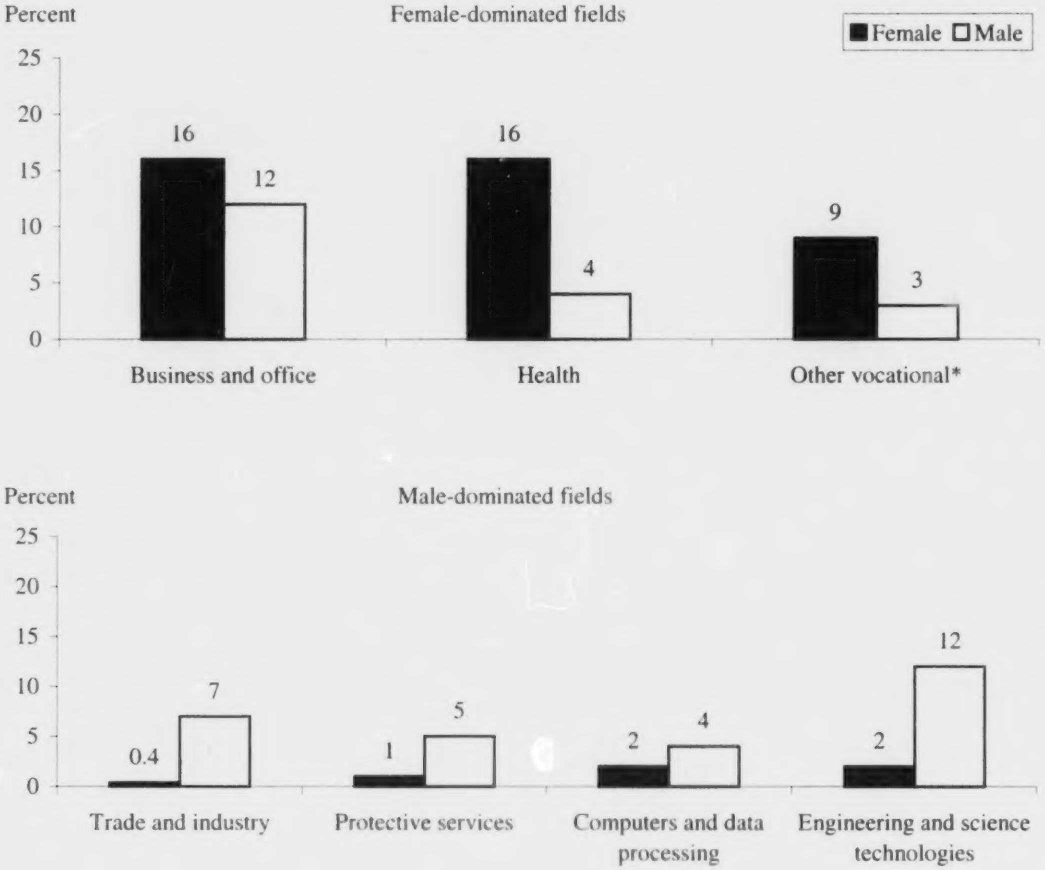
Table 100—Percentage distribution of subbaccalaureate students according to vocational major subcategory, by sex: 1989–90 and 1995–96

							Technical education					
Sex	Any vocational major	Agri-culture	Business and office	Marketing and distri-bution	Health	Home economics	Total	Protective services	Computers/ data processing	Engineering/ science tech-nologies	Trade and industry	Other vocational
						1989–90						
Total	54.3	0.4	17.1	1.1	10.6	2.2	14.3	2.2	3.8	8.3	2.5	6.1
Male	54.7	0.6	14.6	0.9	5.1	1.4	24.4	3.8	4.0	16.6	5.1	2.7
Female	51.9	0.3	18.4	1.2	14.5	3.0	6.4	0.9	3.5	2.0	0.4	7.8
						1995–96						
Total	49.2	0.7	14.1	0.5	10.9	1.8	11.6	2.8	2.7	6.1	3.1	6.6
Male	49.2	0.9	11.5	0.3	4.1	1.7	20.8	5.0	3.7	12.1	7.0	2.9
Female	49.3	0.5	15.9	0.6	15.8	1.9	4.9	1.1	2.1	1.7	0.4	9.2

NOTE: Percentages may not add to totals due to rounding.

SOURCE: U.S. Department of Education, National Center for Education Statistics, 1989–90 and 1995–96 National Postsecondary Student Aid Study.

Figure 34—Percentage of subbaccalaureate students in selected vocational major fields, by sex: 1995–96



*The "other vocational" category includes cosmetology, consumer/personal services, and legal assisting, among other fields.

SOURCE: U.S. Department of Education, National Center for Education Statistics, 1995–96 National Postsecondary Student Aid Study.

WORK EXPERIENCE WHILE ENROLLED

While many subbaccalaureate students were employed while they were enrolled in school, work experience that was directly related to coursework (such as internships, apprenticeships, or cooperative education) was relatively rare. In general, whether subbaccalaureate students had a vocational or academic major was not related to whether they worked in general or had a job linked to their schoolwork.

- Among subbaccalaureate students, working while enrolled in school was a very common practice. In both 1989–90 and 1995–96, about four in five students worked for pay at some point during the school year (table 101). Moreover, of those who worked for pay in 1995–96, 58 percent worked at least 35 hours a week, and 31 percent worked 20–34 hours a week. About 12 percent of subbaccalaureate students worked fewer than 20 hours a week. Students with vocational and academic majors were equally likely to have worked for pay in 1989–90, while in 1995–96, vocational majors were slightly less likely than academic majors to have worked for pay during the school year (77 versus 82 percent). However, among employed students in 1995–96, vocational majors were more likely than their academic peers to work 35 or more hours per week (figure 35).

Table 101—Percentage of subbaccalaureate students who worked while enrolled and, of those who worked, percentage distribution according to average hours worked per week, by major field category: 1989–90 and 1995–96

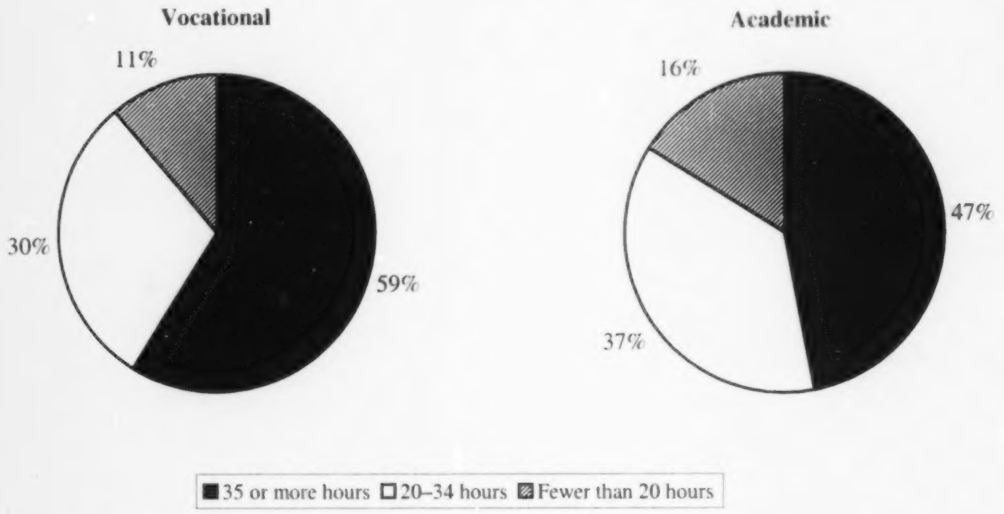
Major field category	Worked for pay	Hours worked per week: Fewer than 20	20–34	35 or more
		1989–90		
Total	79.7	—	—	—
Vocational	79.0	—	—	—
Academic	80.1	—	—	—
Major not reported	80.9	—	—	—
		1995–96		
Total	80.6	11.6	30.9	57.5
Vocational	77.3	10.8	30.1	59.1
Academic	82.3	15.8	37.1	47.1
Major not reported	85.4	9.5	27.0	63.5

—Data not available.

NOTE: Percentages may not add to 100 due to rounding.

SOURCE: U.S. Department of Education, National Center for Education Statistics, 1989–90 and 1995–96 National Postsecondary Student Aid Study.

Figure 35—Percentage distribution of employed subbaccalaureate students according to hours worked per week, by major field category: 1995–96



SOURCE: U.S. Department of Education, National Center for Education Statistics, 1995–96 National Postsecondary Student Aid Study.

- Work experience that is connected to postsecondary coursework is uncommon. In 1995–96, about 8 percent of subbaccalaureate students reported participating in an internship, apprenticeship, or cooperative education during their postsecondary careers (table 102). Half of those participating had worked in internships. Vocational and academic students were equally likely to have had school-linked work experiences. (These data were not available for 1989–90.)

- Among students who first enrolled in postsecondary education in 1989–90 and were no longer enrolled in February 1994, a minority of vocational majors (13 percent) reported having at least one job while they were enrolled that was related to their studies (table 103). Vocational majors were no more likely than academic majors to have worked in a related job while they were enrolled. Students who had pursued a bachelor's degree were more likely to have had a related job than those seeking other degrees. (This difference may reflect the duration of a bachelor's degree program.)

Table 102—Percentage of subbaccalaureate students participating in various school-related work experience programs, by major field category: 1995–96

Major field category	Any school-related work experience program	Internship	Apprenticeship	Cooperative education
Total	8.3	4.4	2.2	2.3
Vocational	9.5	4.5	3.3	2.4
Academic	10.0	6.9	1.6	2.0
Major not reported	4.4	1.6	0.6	2.3

NOTE: Percentages may not add to totals because some students may have participated in more than one type of work experience program.

SOURCE: U.S. Department of Education, National Center for Education Statistics, 1995–96 National Postsecondary Student Aid Study.

Table 103—Percentage of 1989–90 beginning postsecondary students not enrolled in February 1994 who reported various links between their postsecondary education and their most recent principal job, and who had at least one job related to their studies, by major field category and degrees attained: 1994

Major field category and degrees attained	Apply skills from school	Use tools/ equipment trained on at school	Needed education to get job	First job after postsecondary education different from last job during postsecondary education	Had at least one job while enrolled that was related to studies
Total	76.8	84.9	57.0	31.9	13.1
Most recent major					
Academic	71.1	84.0	61.8	31.0	16.5
Vocational	77.6	85.2	58.2	30.1	13.3
Types of degrees attained 1989–94					
None	69.6	75.8	38.6	30.7	5.9
Certificate	85.4	92.8	68.5	40.2	9.2
Associate's	90.5	95.2	71.7	24.2	20.4
Bachelor's	72.7	87.6	70.7	32.9	29.8

SOURCE: U.S. Department of Education, National Center for Education Statistics, 1989–90 Beginning Postsecondary Students Longitudinal Study, Second Follow-up, 1994.

- Among students who first enrolled in postsecondary education in 1989–90 and were enrolled in February 1994, about two-thirds were working (table 104). Neither the level or the control of their 1989–90 postsecondary institution nor their most recently reported major (vocational or academic) was related to whether these enrolled students were working in February 1994.

Table 104—Percentage distribution of 1989–90 beginning postsecondary students who were enrolled in 1994 according to their February 1994 employment status and of those employed, type of primary occupation in 1993, by selected student and institutional characteristics

	Employment status in Feb. 1994		Primary occupation in 1993					
Selected student and institutional characteristics	Not employed	Employed	Clerical	Services/ sales	Managerial/ computer	Professional	Craft/repair/labor/ machining	Other
Total	34.7	65.3	27.2	26.4	19.8	10.2	11.1	5.4
Most recent major								
Academic	37.2	62.8	30.7	30.8	14.5	9.8	9.1	5.2
Vocational	32.6	67.4	25.4	22.7	24.4	9.8	13.2	4.5
Level of institution in 1989–90								
4-year	35.9	64.1	26.8	27.2	17.9	13.0	9.1	6.0
Less-than-4-year	33.2	66.8	27.7	25.4	22.4	6.2	13.8	4.5
Control of institution in 1989–90								
Public	34.1	65.9	26.6	27.4	20.5	9.0	11.0	5.6
Private, not-for-profit	37.8	62.2	29.9	23.5	17.1	15.7	8.8	5.0
Private, for-profit	34.4	65.6	26.0	14.2	16.1	12.4	31.4	0.0
Primary occupation in 1990								
Clerical	19.8	80.2	60.9	7.8	20.8	5.2	3.9	1.4
Services/sales	19.8	80.2	31.0	44.2	11.9	3.6	4.5	4.9
Managerial/computer*	24.2	75.8	26.4	15.2	30.0	9.3	6.2	13.0
Professional	—	—	—	—	—	—	—	—
Craft/repair/labor/machining	36.8	63.3	8.4	20.1	9.0	7.4	47.6	7.6
Other	—	—	—	—	—	—	—	—

—Too few sample observations for a reliable estimate.

*Includes students who reported they were in either a manager/administrator or technical/computer occupation.

NOTE: Percentages may not add to 100 due to rounding. Estimates appearing as 0.0 may be nonzero but less than 0.05.

SOURCE: U.S. Department of Education, National Center for Education Statistics, 1989–90 Beginning Postsecondary Students Longitudinal Study, Second Follow-up, 1994.

POSTSECONDARY COMPLETION AND OTHER OUTCOMES

This section examines differences in postsecondary degree completion, licensure, and labor market outcomes.[112] Among the group of students who first began their postsecondary studies in 1989–90, those with academic majors were more likely than students with vocational majors to have completed at least one postsecondary credential 4 years later. However, a majority of both academic and vocational majors completed some type of degree or certificate within 4 years. A large majority of beginning postsecondary students were employed 4 years later, and this was even more pronounced among those who were not enrolled in 1994. The likelihood of being employed did not differ between vocational and academic majors.

Postsecondary Completion

- Educational aspirations were high among students beginning their postsecondary education in 1989–90. About one-third of those who declared either a vocational or an academic major in their first year planned to eventually earn a bachelor's degree, and an additional 37 percent of vocational majors expected to earn a graduate or professional degree (table 105). An even higher proportion, 58 percent, of first-year academic majors aspired to a graduate or professional degree. Long-term aspirations, the degree sought when enrolling for the first time, and one's major field (vocational or academic) may all influence the length of time it takes a student to attain a postsecondary credential. Indirectly, such factors may also influence employment outcomes.

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[112] In this section, we included students who reported pursuing 4-year degrees in 1989–90, in order to be able to compare outcomes for students working toward baccalaureate and subbaccalaureate credentials.

Table 105—Percentage distribution of 1989–90 beginning postsecondary students according to their educational aspirations, by major field category and degree goal in 1989–90

Major field category and degree goal	Highest level of education ever expected to complete: Trade school, including credential	Some college, associate's degree	Bachelor's degree	Graduate/ professional degree
Total	9.1	12.8	35.9	42.1
Major in 1989–90				
Academic	1.3	7.3	33.5	57.9
Vocational	12.2	15.0	36.0	36.9
Degree working toward in 1989–90				
Certificate/license	42.4	23.8	21.8	12.0
Associate's total	5.3	22.7	42.5	29.5
Academic associate's	3.4	16.1	47.2	33.3
Vocational associate's	6.1	25.6	40.5	27.9
Bachelor's	0.6	1.2	35.0	63.2
No credential	9.5	44.9	26.8	18.8

NOTE: Percentages may not add to 100 due to rounding.

SOURCE: U.S. Department of Education, National Center for Education Statistics, 1989–90 Beginning Postsecondary Students Longitudinal Study, Second Follow-up, 1994.

- About one in four students (26 percent) who began their postsecondary education in 1989–90 were enrolled in spring 1994 (table 106). The three-quarters (74 percent) who were not enrolled were equally likely to have earned or not earned a credential (37 percent in each group).

Table 106—Percentage distribution of 1989–90 beginning postsecondary students according to their enrollment and attainment status in spring 1994, by selected student characteristics

Selected student characteristics	Not enrolled in spring 1994			Enrolled in spring 1994		
	Total	No degree	Attained degree	Total	No degree	Attained degree
Total	73.6	36.8	36.8	26.4	13.2	13.2
Major in 1989–90						
Academic	65.3	24.3	41.1	34.7	16.7	18.0
Vocational	75.8	36.0	39.7	24.2	12.4	11.9
Degree working toward in 1989–90						
Certificate/license	89.6	31.7	57.9	10.4	4.1	6.4
Associate's total	73.7	40.7	33.0	26.3	12.9	13.4
Academic associate's	63.8	30.6	33.2	36.2	12.6	23.6
Vocational associate's	77.9	45.0	32.9	22.1	13.1	9.1
Bachelor's	65.1	23.7	41.4	34.9	17.4	17.5
No credential	82.2	71.7	10.6	17.8	14.0	3.8
Transfer status through first degree						
Did not transfer	78.3	39.2	39.1	21.7	9.0	12.7
Transferred	62.0	31.0	31.0	38.0	23.8	14.3

NOTE: Percentages may not add to totals due to rounding.

SOURCE: U.S. Department of Education, National Center for Education Statistics, 1989–90 Beginning Postsecondary Students Longitudinal Study, Second Follow-up, 1994.

- Half of beginning postsecondary students had attained at least one postsecondary credential by 1994 (table 107). Of those who received a credential, a little more than half earned bachelor's degrees; one-fourth earned certificates; and slightly less than one-fourth earned associate's degrees.

- Beginning postsecondary students with an academic major were more likely than vocational majors to have attained a credential by 1994 (59 percent versus 52 percent) (table 107). In spring 1994, a minority of vocational and academic majors (36 percent and 24 percent, respectively) both were not enrolled and had not earned a degree (table 106). Among those who had completed a degree, vocational majors were more likely than academic majors to have earned a certificate, about equally likely to have earned an associate's degree, and less likely to have earned a bachelor's degree by 1994 (table 107).

Table 107—Percentage distribution of 1989–90 beginning postsecondary students according to their attainment status in spring 1994 and, of those who attained a degree, type of degree, by selected student characteristics

Selected student characteristics	No degree total	Attained degree total	Type of degree attained		
			Certificate	Associate's	Bachelor's
Total	50.1	49.9	25.9	22.5	51.6
Major in 1989–90					
Academic	40.9	59.1	8.6	19.4	72.0
Vocational	48.4	51.6	36.7	22.7	40.6
Degree working toward in 1989–90					
Certificate/license	35.8	64.2	89.3	8.0	2.8
Associate's total	53.6	46.4	25.5	54.1	20.4
Academic associate's	43.2	56.8	14.1	58.1	27.9
Vocational associate's	58.0	42.0	32.1	51.9	16.1
Bachelor's	41.1	58.9	5.3	11.4	83.4
No credential	85.7	14.4	—	—	—
Transfer status through first degree					
Did not transfer	48.2	51.8	21.4	21.8	56.7
Transferred	54.8	45.3	38.7	24.3	37.0

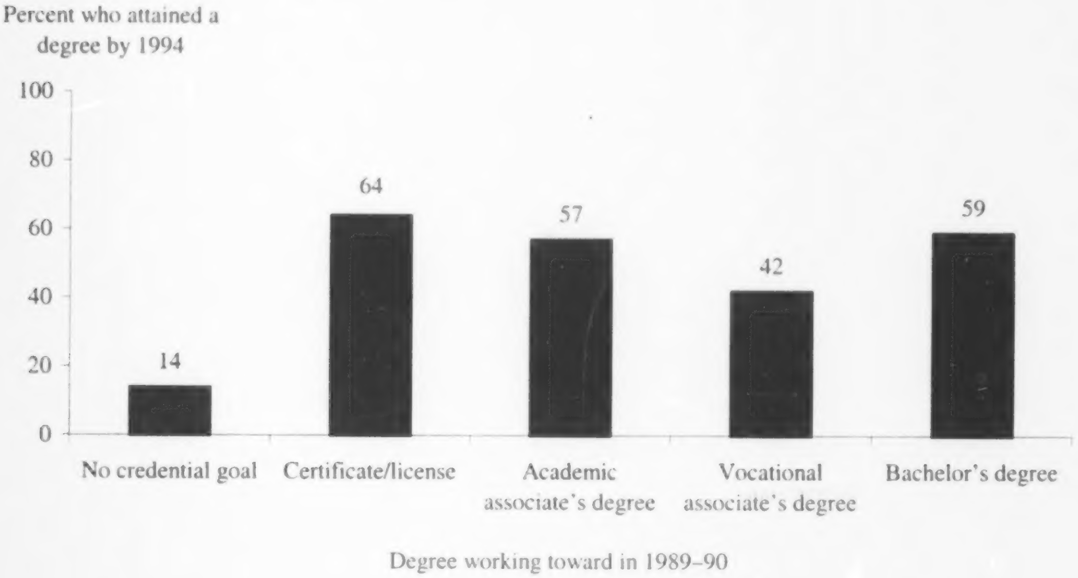
—Too few sample observations for a reliable estimate.

NOTE: Percentages may not add to 100 due to rounding.

SOURCE: U.S. Department of Education, National Center for Education Statistics, 1989–90 Beginning Postsecondary Students Longitudinal Study, Second Follow-up, 1994.

- Among students who first began their postsecondary studies in 1989–90, there was little difference between certificate and bachelor's degree seekers in their likelihood of attaining a postsecondary credential within 4 years (table 107 and figure 36). However, those who began by pursuing a vocational associate's degree were less likely than other students to have earned a credential within 4 years. About 42 percent of vocational associate's degree seekers attained a degree or certificate in comparison with 57 percent of academic associate's degree seekers, 59 percent of bachelor's degree seekers, and 64 percent of certificate seekers.

Figure 36—Percentage of 1989–90 beginning postsecondary students who attained a degree by 1994, by degree working toward in 1989–90



SOURCE: U.S. Department of Education, National Center for Education Statistics, 1989–90 Beginning Postsecondary Students Longitudinal Study, Second Follow-up, 1994.

- Among students who first began their postsecondary studies in 1989–90, students pursuing an academic associate's degree were more likely than all other groups to transfer[113] to a different postsecondary institution (58 percent did so) (table 108). Students seeking a certificate or license were least likely to transfer (19 percent did so). One in three students seeking a vocational associate's degree transferred. Of this last group, about half transferred to 4-year institutions, and 77 percent to public institutions. Among all beginning postsecondary students, those who transferred were slightly less likely than nontransfer students to have attained a degree by 1994 (45 versus 52 percent) (table 107).

Table 108—Percentage distribution of 1989–90 beginning postsecondary students according to their transfer status in spring 1994 and, of those who transferred, type of destination institution, by selected student and institutional characteristics

Selected student and institutional characteristics	Did not transfer	Total transferred	Destination institution: Level: 4-year	Destination institution: Level: Less than 4-year	Destination institution: Control: Public	Destination institution: Control: Private
Total	65.5	34.5	51.6	48.4	77.9	22.1
Major in 1989–90						
Academic	63.5	36.5	61.3	38.7	78.2	21.8
Vocational	70.7	29.3	52.1	47.9	78.2	21.8
Degree working toward in 1989–90						
Certificate/license	81.0	19.0	27.0	73.0	49.3	50.7
Associate's total	59.3	40.8	54.8	45.2	79.7	20.3
Academic associate's	42.3	57.7	62.8	37.2	83.9	16.1
Vocational associate's	66.5	33.5	48.9	51.1	76.7	23.3
Bachelor's	69.3	30.7	64.1	36.0	83.5	16.5
No credential	63.9	36.1	29.6	70.5	59.1	40.9
Level of institution in 1989–90						
4-year	70.1	29.9	57.0	43.0	80.7	19.3
Less-than-4-year	61.9	38.2	48.4	51.6	76.1	23.9
Control of institution in 1989–90						
Public	63.6	36.4	52.9	47.1	80.0	20.0
Private, not-for-profit	67.9	32.2	57.5	42.5	73.0	27.0
Private, for-profit	75.4	24.6	26.3	73.8	64.8	35.2

SOURCE: U.S. Department of Education, National Center for Education Statistics, 1989–90 Beginning Postsecondary Students Longitudinal Study, Second Follow-up, 1994.

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[113] Transferring is defined here as enrolling in a different institution from the first one and not returning, regardless of whether a credential was completed at the first institution or whether credits were transferred.

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Licensure

Taking an occupational licensing exam was not very common among beginning postsecondary students. Those who started with a vocational major were no more likely to have taken a licensing exam by 1994 than those with an academic major. However, vocational majors were more likely to have taken a licensing exam in the business/finance, nursing, cosmetology/barbering, and engineering-related fields, while academic majors were more likely to have taken a teaching exam. Pass rates for licensing exams were generally high.

- A minority (14 percent) of students who first began their postsecondary studies in 1989–90 had taken an occupational licensing exam within 4 years (table 109). Students who began with a vocational or academic major were equally likely to have taken a licensing exam. Vocational majors were more likely to have taken a licensing exam in the business/finance, nursing, cosmetology/barbering, and engineering-related fields. Academic majors were more likely to have taken a licensing exam in the teaching field.

Table 109—Percentage of 1989–90 beginning postsecondary students who took an occupational licensing exam by 1994, and, of those who took at least one exam, percentage who took an exam in various fields, by major field category and degree goal

Major field category and degree goal	Took a licensing exam	Type of licensing exam							
		Teachers	Business/ finance	Nursing	Other medical	Cosmetology/ barbering	Engineering-related	Communications	Other licensing exam
Total	14.0	20.9	12.1	9.4	21.8	8.9	3.1	1.3	28.9
Major in 1989–90									
Academic	14.0	58.1	7.7	2.2	15.3	2.2	0.0	0.1	25.1
Vocational	14.6	2.2	15.3	13.4	23.1	12.8	4.3	1.4	32.0
Degree working toward in 1989–90									
Certificate/license	20.7	0.9	3.4	13.8	25.7	30.1	0.0	0.2	29.6
Associate's total	12.7	17.3	6.3	14.5	18.9	3.9	0.2	2.6	41.6
Academic associate's	11.1	64.6	0.7	0.6	9.1	0.6	0.0	0.0	30.5
Vocational associate's	13.4	1.0	8.2	19.3	22.2	5.0	0.2	3.4	45.4
Bachelor's	13.9	33.6	19.1	5.2	19.5	1.8	5.4	0.5	24.1
No credential	11.6	—	—	—	—	—	—	—	—

—Too few sample observations for a reliable estimate.

NOTE: Percentages in the last eight columns add to more than 100 because some students took exams in more than one field. Estimates appearing as 0.0 may be nonzero but less than 0.05.

SOURCE: U.S. Department of Education, National Center for Education Statistics, 1989–90 Beginning Postsecondary Students Longitudinal Study, Second Follow-up, 1994.

- The pass rates for licensing exams were quite high—generally at least 90 percent (table 110). The business/finance field appeared to be an exception, with an 81 percent pass rate. However, few students took licensing exams; sample sizes were small and differences between the rates for business and other fields were not statistically significant.

Table 110—Among 1989–90 beginning postsecondary students who took an occupational licensing exam, percentage who passed at least one exam by 1994, and the pass rate by occupational field

	Passed a licensing exam	Type of licensing exam							
		Teachers	Business/ finance	Nursing	Other medical	Cosmetology/ barbering	Engineering-related	Communications	Other licensing exam
Total	91.1	92.7	80.5	97.3	99.0	97.4	95.8	100.0	92.1

SOURCE: U.S. Department of Education, National Center for Education Statistics, 1989–90 Beginning Postsecondary Students Longitudinal Study, Second Follow-up, 1994.

Labor Market Participation

- Data on all adults 18 or older in the United States in 1996 indicate that both rates of employment and labor force participation rise with educational attainment. For example, in 1996, 39 percent of adults who had not completed high school were employed, while bachelor's or higher degree holders were employed at about twice that rate (table 111 and figure 37). Similarly, more than half of adults lacking a high school diploma were not in the labor force, compared with 19 percent of those with at least a bachelor's degree. The unemployment rate of those who had not completed high school was roughly five times that of bachelor's or graduate degree holders (10 percent versus 2 percent).

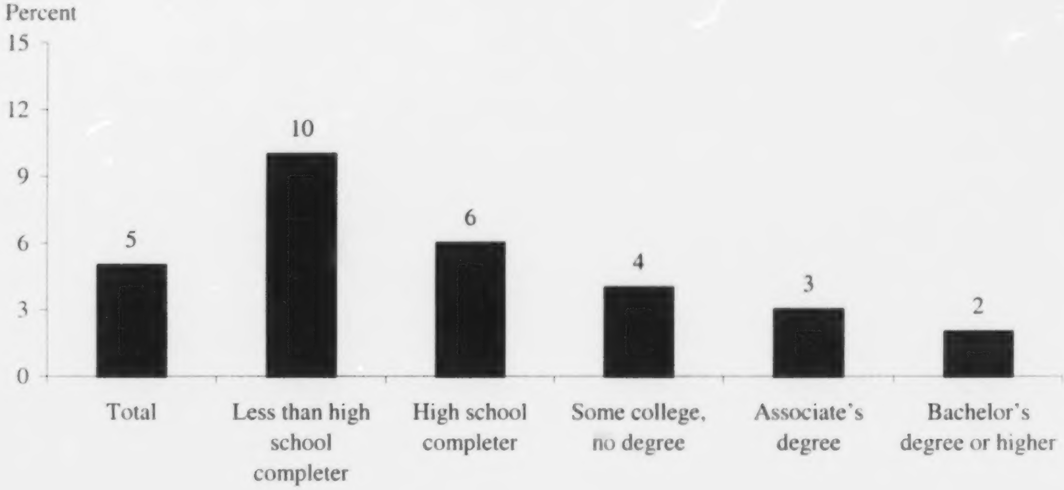
Table 111—Percentage distribution of all adults aged 18 years or older and of those in the labor force according to their employment status, by educational attainment: 1996

Educational attainment	Of all adults			Of those in the labor force	
	Employed	Unemployed	Not in labor force	Employed	Unemployed
Total	65.1	3.2	31.8	95.3	4.7
Less than high school completion	39.4	4.4	56.2	90.0	10.0
High school completion	63.7	3.7	32.6	94.5	5.5
Some college, no degree	69.7	3.0	27.3	95.9	4.2
Associate's degree	77.5	2.6	20.0	96.8	3.2
Bachelor's degree or higher	79.6	1.7	18.7	97.9	2.1

NOTE: Percentages may not add to 100 due to rounding.

SOURCE: U.S. Department of Commerce, Bureau of the Census, October Current Population Survey, 1996.

Figure 37—Percentage of labor force participants aged 18 years or older who were unemployed, by educational attainment: 1996



SOURCE: U.S. Department of Commerce, Bureau of the Census, October Current Population Survey, 1996.

- Among students who first began their postsecondary studies in 1989–90 and were no longer enrolled in the spring of 1994, about four-fifths had a job in February 1994 (table 112). The likelihood of being employed did not differ substantially for vocational and academic majors.

- Among employed respondents who first began their postsecondary studies in 1989–90 and were no longer enrolled in the spring of 1994, the most common occupations were clerical (about 25 percent), service/sales (22 percent), and managerial/computers (21 percent) (table 112). The level of institution in which students started their postsecondary studies was not related to their likelihood of having a job in spring 1994. However, the control of institution was relevant: those who enrolled initially at private, for-profit institutions, and were no longer enrolled 4 years later, were somewhat less likely to have a job. One explanation may be that private, for-profit institutions prepare their students less well for the labor market; alternatively, these institutions may enroll a higher proportion of students with low prior achievement than other types of schools.

- Among students who first began their postsecondary studies in 1989–90, those who were no longer enrolled in the spring of 1994 were more likely to be employed than those still enrolled (78 versus 65 percent) (tables 112 and 104). Enrolled students were somewhat more likely to be working in a service or sales job, while those no longer enrolled were more likely to hold a job in trade and industry (crafts, repair, labor, or machining).

- Among students who first began their postsecondary studies in 1989–90 and were no longer enrolled in the spring of 1994, a majority of vocational majors reported that in their most recent principal job they applied skills and used equipment or tools similar to the ones they used in school, and that they needed their postsecondary education to get that job (78 percent, 85 percent, and 58 percent, respectively, reported these work-school linkages) (table 103). About 70 percent of vocational majors reported that their first job after leaving postsecondary education was the same as their last job while enrolled.

Table 112—Percentage distribution of 1989–90 beginning postsecondary students who were not enrolled in 1994 according to their February 1994 employment status and of those employed, type of primary occupation in 1993, by selected student and institutional characteristics

	Employment status in Feb. 1994		Primary occupation in 1993					
Selected student and institutional characteristics	Not employed	Employed	Clerical	Services/ sales	Managerial/ computer	Professional	Craft/repair/labor/ machining	Other
Total	21.8	78.2	24.7	21.6	21.0	9.7	15.5	7.6
Most recent major								
Academic	22.5	77.5	27.4	22.6	19.3	11.4	8.2	11.1
Vocational	20.8	79.2	23.4	21.7	22.2	9.9	17.8	5.0
Level of institution in 1989–90								
4-year	21.7	78.3	24.6	21.9	21.1	14.8	9.4	8.2
Less-than-4-year	21.8	78.2	24.7	21.5	20.9	6.5	19.3	7.1
Control of institution in 1989–90								
Public	20.9	79.1	24.0	22.3	21.2	8.3	15.6	8.6
Private, not-for-profit	17.9	82.1	23.6	18.9	22.7	18.9	8.1	7.7
Private, for-profit	30.3	69.7	29.6	21.4	17.5	5.8	24.1	1.8

NOTE: Percentages may not add to 100 due to rounding.

SOURCE: U.S. Department of Education, National Center for Education Statistics, 1989–90 Beginning Postsecondary Students Longitudinal Study, Second Follow-up, 1994.

VII. Conclusion

This publication describes vocational education at the turn of the century as an enterprise in transition. The traditional focus on preparing students for entry-level jobs after high school or subbaccalaureate postsecondary vocational training is giving way to a greater emphasis on academic preparation and preparing students for a wider range of career choices. The available data signal that change is occurring in the directions advocated by recent reform efforts, although such change is often small and preliminary. Evidence of change includes findings that the academic preparation of high school students participating in vocational education increased between 1982 and 1994; about half of public comprehensive high schools reported integrating academic and vocational education, and a similar proportion reported offering tech prep, by 1997; and over the decade from 1982 to 1992, postsecondary enrollment rates within 2 years of high school graduation increased for vocational concentrators.

This chapter revisits the key questions that were identified in the Executive Summary and expanded on in Chapter II, and summarizes the relevant findings.

KEY QUESTIONS AND RELEVANT FINDINGS

What are the major national economic and labor market trends and their implications for vocational education programs and policies?

The United States is shifting from a manufacturing- to a service- and information-based economy. These trends have two important implications for vocational education programs. They signal an ongoing shift in the education and training fields that are required of the U.S. work force as well as the levels of that education and training. The occupations with the highest projected growth rates are generally in the computer technology and health fields. Those with the highest projected increase in number of jobs are somewhat more varied, although they also include several health occupations. While the occupations with the highest projected growth rates have relatively high education and training requirements, those with the highest projected increase in number of jobs have relatively low education and training requirements. Implications are that some emerging occupations require high education and training requirements, while the majority of jobs still demand relatively low education and training levels. There is consensus in the research literature that there are trends toward greater education and training requirements and a greater need for critical thinking, personal responsibility, and social skills among work force participants. However, these trends are not uniform across industries and occupations, and some disagree about their magnitude. Although researchers have long identified the association between increased educational attainment and better labor market outcomes, the disparity in incomes between those with more and less education has increased in recent years. Some argue that this means that education and training are increasingly crucial for narrowing the income gap and for preventing the creation of a society of haves and have nots. (Chapter II)

What skills do employers value and how have skill requirements changed in recent years? Are employers implementing high-performance workplaces?

Employers do not rate years of completed schooling or academic performance as important as attitude and communication skills, when hiring front-line workers from among an established applicant pool. Nevertheless, most employers report that front-line skill requirements are increasing. There is evidence that some employers are transforming their firms into high-performance workplaces, with larger firms being more likely than smaller firms to undergo certain changes. These firms, however, are still in the minority. Both good critical-thinking and social skills are necessary in the decentralized and team-based environment of the high-performance workplace. However, the extent to which these practices will be implemented and these skills be required in the future is uncertain. (Chapter III)

How large is the vocational education enterprise and is it growing, shrinking, or holding constant over time?

From 1982 to 1994, there was a general decline in the participation of high school students in vocational education. The percentage of public high school graduates taking at least one vocational education course decreased slightly. However, the decline in the percentage of graduates completing a sequence of related occupational courses was more dramatic. These decreases may be partly due to increases in high school graduation requirements implemented by many states after the publication of *A Nation at Risk* in 1983. As students have been required to take more academic coursework, they may have elected to take fewer vocational courses. (Chapter IV)

At the postsecondary level, vocational coursework is a substantial component of subbaccalaureate students' education. Among all subbaccalaureate students, about one-half majored in a vocational program area in 1996; the proportion decreased from 54 to 49 percent over the 6 years from 1990 to 1996. (Chapter VI)

What types of and how much vocational education do students take and is this changing?

In particular, what are the trends in specific occupational preparation at the high school and postsecondary levels? Is there a shift from participation in traditional manufacturing programs (such as trade and industrial programs) toward service-sector and information-age programs (such as health and technology programs)?

Trade and industry and business were the most popular occupational programs in 1994—about 8 percent of graduates concentrated in each of these areas. These were also the most popular programs in earlier years; however, the percentage of graduates concentrating in trade and industry, as well as the percentage concentrating in business, declined over the period studied. In 1982, about 15 percent of graduates had concentrated in trade and industry and 12 percent in business. In contrast, fewer students concentrated in health care and in technology and communications than in business and in trade and industry in all the surveyed years. However, the proportions of students who concentrated in health care and in technology and communications increased between 1982 to 1994 (from .6 to 1 percent for health care, and from .5 to .9 percent for technology and communications). (Chapter IV)

At the postsecondary level, popular vocational majors in 1996 included business (about 14 percent of subbaccalaureate students reported this major); health (11 percent); and engineering/science technologies (6 percent). Technical education as a whole, which includes computers/data processing, engineering/science technologies, and protective services, accounted for 12 percent of all subbaccalaureate majors. However, between 1990 and 1996, there were small decreases in the proportion of subbaccalaureate students reporting majors in business, marketing, computers/data processing, and engineering/science technologies. (Chapter VI)

Who participates in vocational education and is this changing?

In public high schools, although participation in the specific occupational curriculum declined for most groups of students between 1982 and 1994, there were a few exceptions to this trend. The percentage of black and Asian/Pacific Islander students concentrating in vocational education stayed about the same over this period, and the concentration rate of students with disabilities increased. In addition, the average number of specific occupational credits earned by blacks stayed about the same and increased for Asians/Pacific Islanders and students with disabilities. The increase in participation of students with disabilities is consistent with the emphasis of the 1990 Perkins Act on serving students with special needs. In all the surveyed years from 1982 to 1994, male students, students in rural schools, and students with lower grade-point averages (GPAs) completed more specific occupational coursework and were more likely to be vocational concentrators than female students, students in urban and suburban schools, and students with higher GPAs. (Chapter IV)

At the postsecondary level, subbaccalaureate students with vocational majors were older, more likely to have family responsibilities, more likely to receive financial aid, more likely to have a previous postsecondary degree or certificate, and reported higher postsecondary grade-point averages (GPAs) than their academic counterparts. These students with vocational majors also tended to have parents with lower educational attainment: as the education level of their parents increased, students' likelihood of reporting a vocational major generally decreased. Differences by race–ethnicity among subbaccalaureate students in the probability of having a vocational major were either minimal or not statistically significant. Unlike at the secondary level, there was no clear association between majoring in a vocational field and disability status among subbaccalaureate postsecondary students. (Chapter VI)

Is the academic preparation of students who participate in vocational education improving over time?

In public high schools, the academic preparation of students participating in vocational education increased between 1982 and 1994, in both absolute and relative terms. While public high school graduates in general increased their course taking in the core academic subjects (English, mathematics, science, and social studies), the rate of increase over the period studied was greater for vocational concentrators than for either college preparatory or other/general students. However, in 1994, vocational concentrators still completed fewer total credits in each of the core academic subjects than did either college preparatory or other/general students. Vocational concentrators also generally increased the rigor of their academic coursework, particularly in mathematics, science, and social studies. (Chapter IV) Comparable data were not available at the postsecondary level.

Are high school students enrolling in courses that teach technological skills?

The percentage of public high school graduates taking at least one computer education course increased substantially between 1982 and 1990, and then remained relatively steady through 1994. In that year, about 80 percent of graduates had completed at least one semester of computer education. Participation in the more traditional "industrial arts" declined over the 1982–1994 period, while participation in the newer "technology education" increased. However, it is not possible to determine from the available data the extent to which this shift reflects relabeling, rather than a change in course objectives or content. In 1994, fewer graduates completed coursework in the combined introductory technology fields than in 1982. (Chapter IV)

What is the role of work experience and work-based learning in students' courses of study?

Most public high school graduates work during their senior year of high school, although most of these students work part time. In addition to student-found employment, many schools offer work-based learning experiences, with cooperative education being the most common form of work-based learning, followed by job shadowing, internships, and mentoring. Although participation in occupational education decreased between 1982 and 1994, the percentage of public high school graduates earning cooperative education credits increased somewhat over the same time period. By 1994, about one in ten graduates participated in cooperative education. (Chapter IV)

At the postsecondary level, many subbaccalaureate students were employed while they were enrolled in school in 1995–96. However, work experience that was directly related to coursework (such as internships, apprenticeships, or cooperative education) was relatively rare. In general, whether subbaccalaureate students had a vocational or academic major was not related to whether they worked in general or had a job linked to their schoolwork. (Chapter VI) Among 1992 public high school graduates who were both employed and enrolled in postsecondary education 2 years after high school, those who were vocational concentrators in high school had a stronger work orientation than other students. About one quarter (26 percent) of postsecondary students who were vocational concentrators in high school identified themselves primarily as workers rather than as students, in comparison with 7 percent of college preparatory graduates and 21 percent of other/general graduates. (Chapter V)

The majority of employers with production employees who participated in work-based learning reported that these employees were superior to comparable new hires in terms of productivity and attitude. Virtually no employers reported that employees with work-based learning experience were inferior in these two respects to comparable new hires. (Chapter III)

To what extent have recent vocational education reform efforts taken hold at the local level?

By 1997, public comprehensive high schools reported implementing some vocational education-related reforms, although the quality and specific forms of these efforts were not discernible from the available survey data. About half of these schools reported integrating academic and vocational education, and a similar proportion reported offering tech prep. Fewer schools reported having block scheduling, career majors, school-based enterprises, skill standards, or skill or occupational certificates. Generally, schools with career academies and larger schools were more likely to report these reforms, while rural schools were less likely to do so. (Chapter IV)

What are the trends in vocational teacher qualifications and experience over time?

The available teacher trend data were for school years 1990–91 and 1993–94, and the changes noted were generally small for the 3-year period. However, these changes included a teaching force that grew older and accrued more years of teaching experience. This trend held for vocational and academic teachers alike. The educational attainment of vocational teachers as a group remained about the same over the 3-year period. About the same proportions of vocational and academic teachers held bachelor's degrees. However, about 8 percent of vocational teachers had less than a bachelor's degree, in comparison with less than 1 percent of academic teachers. There were some variations among vocational teachers who taught in different program areas and school settings. For example, trade and industry and technical teachers and those teaching in more than one vocational field were generally least likely to have a bachelor's or advanced degree than other vocational teachers. This may reflect the practice in some states of counting industry experience in place of education in hiring some vocational teachers. Similar percentages of vocational and academic teachers held either standard or advanced certification. A small percentage of vocational and academic teachers were teaching either without a credential or with a probationary, temporary, provisional, emergency, or alternative certificate. (Chapter IV)

What are the postsecondary education outcomes associated with participation in vocational education?

In particular, are more students in secondary vocational education programs enrolling in and completing postsecondary education than in the past? Between 1982 and 1992, postsecondary enrollment rates increased for vocational concentrators and students completing general coursework in high school, but not for college preparatory graduates. While the gap in enrollment rates among the three main curriculum-based groups appeared to be narrowing, 1992 vocational concentrators were still less likely than their college preparatory and other/general peers to enroll in a postsecondary institution within 2 years. However, vocational concentrators who also completed a college preparatory curriculum had enrollment outcomes that were more like those of their college preparatory peers than did strictly vocational concentrators. With regard to completing postsecondary education, among 1982 public high school graduates who enrolled in postsecondary education by 1992, vocational concentrators had lower postsecondary completion rates overall than their peers. However, vocational concentrators who also completed a college preparatory curriculum were as likely as college preparatory graduates to earn a postsecondary degree during this period. Among graduates who enrolled in postsecondary education by 1992, vocational concentrators were less likely than their peers to earn a bachelor's degree, but more likely to obtain a certificate or an associate's degree. (Chapter V)

Are more adults obtaining postsecondary vocational education credentials than before? The United States has experienced both greater educational participation and higher attainment in recent years, continuing long-standing patterns. More people are attending postsecondary institutions than ever before, and the average educational attainment of the adult population (those 18 and older) has been steadily rising. Among adults who completed a college degree, the percentage who held associate's degrees remained fairly steady at about 24 percent between 1992 and 1996. While there appeared to be a small increase in the total number of adults who earned vocational associate's degrees, this difference was not statistically significant. However, the total number of adults who held academic associate's degrees increased between 1992 and 1996 by approximately an additional 1 million people. The percentage of adults seeking a vocational associate's degree declined somewhat since 1991, from about 14 to 11 percent, while the percentage seeking an academic associate's degree rose from 9 to 11 percent. Among the group of students who first began their postsecondary studies in 1989–90, those with academic majors were more likely than students with vocational majors to have completed at least one postsecondary credential 4 years later. However, a majority of both academic and vocational majors completed some type of degree or certificate within 4 years. (Chapter VI)

What are the labor market outcomes associated with participation in vocational education? How do these outcomes compare with other kinds of preparation?

Labor market experiences 2 years after leaving high school were similar for the graduating classes of 1982 and 1992. In both cases, about three out of four public high school graduates were in the labor force. Vocational concentrators in both graduating classes were more likely than their peers to be in the labor force 2 years after graduation. While 1992 public high school graduates had similar labor market experiences regardless of their course of study in high school, 1982 college preparatory graduates tended to have lower unemployment rates than their vocational concentrator and other/general peers. Vocational concentrators and other/general students had similar labor market experiences 10 years after graduation from high school. While the number of months employed and unemployed was similar regardless of one's course of study in high school, college preparatory graduates tended to enjoy higher earnings in 1991 than their peers, possibly because of their greater postsecondary attainment. Obtaining a bachelor's degree was generally associated with increased earnings and lower unemployment rates. At the other end of the education spectrum, students who earned a postsecondary certificate had similar annual earnings and unemployment rates as their peers who did not complete a postsecondary degree or certificate. Furthermore, both postsecondary certificate and high school diploma holders earned less and were more likely to be unemployed in 1991 than graduates who earned an associate's degree or higher. (Chapter V)

Appendix A—Standard Error Tables

This appendix provides estimates, standard errors, unweighted and weighted n's corresponding to most of the tables contained in the body of the report. Estimates take the form of either percentages or averages. Standard errors are abbreviated as "S.E." and represent a valuation of the deviation of the sample mean from the true population mean, or a measure of the accuracy of the estimate. The smaller the S.E., the more accurate the estimate. Unweighted n's represent the actual size of the survey sample on which the estimates and standard errors are based, while weighted n's represent projections of the size of the relevant population.

For example, in table A1 (corresponding to table 1 in the Introduction), the Total estimate for 1982 is 98.2 percent. The standard error associated with this estimate is 0.19 percent. The 98.2 percent figure was derived from data on a sample of 9,596 public high school graduates (the unweighted n) in the High School and Beyond Sophomore Cohort Second Follow-up Survey, while it is estimated that there were actually 2,606,000 public high school graduates (the weighted n) in 1982.

To estimate the number of persons in the population who meet certain criteria, you can apply percentage estimates (but not averages) to the weighted n's. Based on table A1, for example, you would estimate that 2,559,092 (or 98.2 percent times 2,606,000) public high school graduates in 1982 completed at least one vocational education course in high school. Furthermore, you could say with 95 percent confidence that the true population figure falls between 2,549,189 and 2,568,995 (or within 2 times the S.E. of 0.19 percent around the population estimate).

Table A1—Standard errors for table 1: Percentage of public high school graduates completing one or more courses in vocational education, by type of vocational education: 1982–94

Vocational education type	1982	1990	1994
Total	98.2	98.0	97.2
S.E.	0.19	0.27	0.32
Unweighted n	9,596	16,507	23,706
Weighted n (in 1000s)	2,606	2,505	2,213
Family and consumer sciences education	50.2	48.1	45.1
S.E.	0.91	1.99	1.67
Unweighted n	9,596	16,507	23,706
Weighted n (in 1000s)	2,606	2,505	2,213
General labor market preparation	77.6	68.8	61.1
S.E.	0.71	2.13	1.57
Unweighted n	9,596	16,507	23,706
Weighted n (in 1000s)	2,606	2,505	2,213
Specific labor market preparation	88.7	90.6	90.8
S.E.	0.47	0.67	0.67
Unweighted n	9,596	16,507	23,706
Weighted n (in 1000s)	2,606	2,505	2,213

SOURCE: U.S. Department of Education, National Center for Education Statistics, High School and Beyond Sophomore Cohort 1982 High School Transcript Study and 1990 and 1994 National Assessment of Educational Progress High School Transcript Studies.

Table A2—Standard errors for table 6: Percentage distribution of all adults aged 18 years or older and of those in the labor force according to their employment status, by educational attainment: 1996

	Of all adults			Percent of time in labor force	
Educational attainment	Employed	Unemployed	Not in labor force	Employed	Unemployed
Total	65.1	3.2	31.8	95.3	4.7
S.E.	0.17	0.06	0.09	0.09	0.09
Unweighted n	89,406	89,406	89,406	60,553	60,553
Weighted n (in 1000s)	193,486	193,486	193,486	132,013	132,013
Less than high school completion	39.4	4.4	56.2	90.0	10.0
S.E.	0.42	0.17	0.22	0.39	0.39
Unweighted n	15,387	15,387	15,387	6,491	6,491
Weighted n (in 1000s)	34,089	34,089	34,089	14,921	14,921
High school completion	63.7	3.7	32.6	94.5	5.5
S.E.	0.30	0.12	0.15	0.17	0.17
Unweighted n	30,571	30,571	30,571	20,399	20,399
Weighted n (in 1000s)	65,349	65,349	65,349	44,058	44,058
Some college, no degree	69.7	3.0	27.3	95.9	4.2
S.E.	0.37	0.14	0.19	0.19	0.19
Unweighted n	17,451	17,451	17,451	12,625	12,625
Weighted n (in 1000s)	38,233	38,233	38,233	27,809	27,809
Associate's degree	77.5	2.6	20.0	96.8	3.2
S.E.	0.57	0.22	0.29	0.27	0.27
Unweighted n	6,304	6,304	6,304	5,057	5,057
Weighted n (in 1000s)	13,431	13,431	13,431	10,751	10,751
Bachelor's degree or higher	79.6	1.7	18.7	97.9	2.1
S.E.	0.31	0.10	0.16	0.12	0.12
Unweighted n	19,693	19,693	19,693	15,981	15,981
Weighted n (in 1000s)	42,384	42,384	42,384	34,474	34,474

NOTE: Percentages may not add to 100 due to rounding. Row n's may not add to total n's because of missing data.

SOURCE: U.S. Department of Commerce, Bureau of the Census, October Current Population Survey, 1996.

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Table A3—Standard errors for table 8: Percentage of employers reporting selected high-performance work characteristics, by firm size: 1994 and 1997

	Percentage of employers who			Average percentage of nonmanagerial and nonsupervisory employees participating in	
Firm size (number of employees)	Adopted total quality management program	Underwent reengineering within past 3 years	Participated in performance benchmarking	Job rotation	Self-managed teams
		1994			
Total	36.6	—	22.7	18.8	13.1
S.E.	1.52	—	1.32	0.97	0.85
Unweighted n	2,929	—	2,896	2,835	2,848
Weighted n (in 1000s)	584	—	585	579	572
20–49	33.1	—	19.2	21.6	13.8
S.E.	1.90	—	1.58	1.33	1.13
Unweighted n	485	—	483	481	477
Weighted n (in 1000s)	353	—	358	352	344
50–99	37.3	—	24.6	13.7	12.0
S.E.	3.27	—	2.95	1.68	1.76
Unweighted n	436	—	431	428	429
Weighted n (in 1000s)	127	—	124	126	126
100–249	42.6	—	26.2	16.7	12.1
S.E.	4.43	—	3.93	2.77	2.28
Unweighted n	558	—	559	553	554
Weighted n (in 1000s)	73	—	73	72	72
250 or more	59.9	—	47.1	12.1	11.6
S.E.	6.76	—	6.97	3.26	3.47
Unweighted n	1,450	—	1,423	1,373	1,388
Weighted n (in 1000s)	31	—	30	29	30
		1997			
Total	—	24.9	20.4	21.7	15.5
S.E.	—	1.33	1.25	1.05	0.93
Unweighted n	—	2,934	2,861	2,935	2,928
Weighted n (in 1000s)	—	640	629	652	655
20–49	—	20.4	15.6	24.6	16.3
S.E.	—	1.59	1.44	1.46	1.26
Unweighted n	—	517	513	524	526
Weighted n (in 1000s)	—	387	385	397	401
50–99	—	29.2	24.7	16.7	13.9
S.E.	—	3.02	2.91	1.83	1.83
Unweighted n	—	493	476	496	495
Weighted n (in 1000s)	—	138	134	139	139

Table A3—Standard errors for table 8: Percentage of employers reporting selected high-performance work characteristics, by firm size: 1994 and 1997—Continued

Firm size (number of employees)	Percentage of employers who: Adopted total quality management program	Underwent reengineering within past 3 years	Participated in performance benchmarking	Average percentage of nonmanagerial and nonsupervisory employees participating in: Job rotation	Self-managed teams
100–249	—	30.9	28.8	17.8	14.1
S.E.	—	3.96	3.97	2.61	2.32
Unweighted n	—	559	545	569	562
Weighted n (in 1000s)	—	83	79	85	84
250 or more	—	44.9	39.3	18.4	16.5
S.E.	—	6.93	6.92	4.16	4.28
Unweighted n	—	1,365	1,327	1,346	1,345
Weighted n (in 1000s)	—	32	31	32	31

—Not available.

NOTE: Row n's may not add to total n's because of missing data.

SOURCE: 1994 National Employer Survey, Phase I, and 1997 National Employer Survey, Phase II. Administered by the U.S. Bureau of the Census; designed and funded by the National Center on the Educational Quality of the Workforce at the University of Pennsylvania.

Table A4—Standard errors for table 9: Percentage of employers reporting that they were involved in a school-to-work partnership, by firm size: 1997

Firm size (number of employees)	School-to-work participation
Total	25.4
S.E.	1.33
Unweighted n	2,945
Weighted n (in 1000s)	645
20–49	22.9
S.E.	1.65
Unweighted n	518
Weighted n (in 1000s)	392
50–99	23.8
S.E.	2.83
Unweighted n	492
Weighted n (in 1000s)	138
100–249	32.6
S.E.	4.01
Unweighted n	564
Weighted n (in 1000s)	84
250 or more	44.7
S.E.	6.93
Unweighted n	1,371
Weighted n (in 1000s)	32

NOTE: The sample is made up of private, for-profit employers with 20 or more employees. Row n's may not add to total n's because of missing data.

SOURCE: 1997 National Employer Survey, Phase II. Administered by the U.S. Bureau of the Census; designed and funded by the National Center on the Educational Quality of the Workforce at the University of Pennsylvania.

Table A5—Standard errors for table 10: Percentage of employers reporting that they participated in selected work-based learning activities, by firm size and type: 1997

Firm size and type	All of of these activities	At least one of these activities	Internship	Job shadowing	Co-operative education	Mentoring	Regular apprentice-ship	Youth apprentice-ship
Total	0.8	41.9	20.6	14.8	14.4	9.5	7.8	3.9
S.E.	0.28	1.51	1.24	1.09	1.07	0.90	0.82	0.59
Unweighted n	2,958	2,958	2,954	2,949	2,950	2,949	2,947	2,949
Weighted n (in 1000s)	648	648	647	648	648	646	648	648
Firm size (number of employees)								
20–49	1.3	35.2	17.0	14.6	12.2	9.2	8.1	4.3
S.E.	0.44	1.88	1.48	1.39	1.29	1.14	1.07	0.80
Unweighted n	519	519	518	519	519	518	519	519
Weighted n (in 1000s)	393	393	392	393	393	392	393	393
50–99	0.0	47.1	18.9	13.0	15.4	7.7	7.4	3.0
S.E.	0.00	3.31	2.60	2.23	2.39	1.77	1.73	1.13
Unweighted n	493	493	493	491	493	492	493	493
Weighted n (in 1000s)	138	138	138	138	138	138	138	138
100–249	0.2	54.2	29.3	14.9	19.1	10.6	7.4	3.6
S.E.	0.36	4.24	3.88	3.04	3.35	2.62	2.23	1.59
Unweighted n	565	565	563	564	563	564	564	563
Weighted n (in 1000s)	85	85	84	84	84	84	84	84
250 or more	0.4	68.5	48.6	24.6	24.0	19.4	7.4	3.7
S.E.	0.85	6.44	6.93	5.98	5.93	5.49	3.64	2.63
Unweighted n	1,381	1,381	1,360	1,375	1,375	1,375	1,371	1,374
Weighted n (in 1000s)	32	32	32	32	32	32	32	32
Firm type								
Construction, manufacturing, and transportation	0.0	39.7	16.6	9.0	11.1	5.2	12.3	1.5
S.E.	0.12	2.80	2.14	1.64	1.80	1.27	1.88	0.70
Unweighted n	2,032	2,032	2,029	2,025	2,026	2,026	2,022	2,024
Weighted n (in 1000s)	185	185	185	185	185	185	185	185
Wholesale/retail trade	1.7	38.3	17.1	13.9	18.0	11.4	7.7	6.2
S.E.	0.59	2.21	1.71	1.57	1.74	1.44	1.21	1.10
Unweighted n	241	241	241	241	241	241	241	241
Weighted n (in 1000s)	295	295	295	295	295	295	295	295
Services	0.1	50.5	31.0	22.6	11.6	11.1	3.1	2.4
S.E.	0.20	3.01	2.79	2.52	1.93	1.90	1.05	0.92
Unweighted n	685	685	684	683	683	682	684	684
Weighted n (in 1000s)	168	168	168	167	168	166	168	168

NOTE: The sample is made up of private, for-profit employers with 20 or more employees. Row n's may not add to total n's because of missing data. Estimates appearing as 0.0 or 0.00 may be nonzero but less than 0.05 or 0.005.

SOURCE: 1997 National Employer Survey, Phase II. Administered by the U.S. Bureau of the Census; designed and funded by the National Center on the Educational Quality of the Workforce at the University of Pennsylvania.

Table A6—Standard errors for table 11: Percentage distribution of employers according to their estimations of the education levels of new front-line workers,[1] by firm type: 1997

Firm type	Some postsecondary education[2]	High school diploma or less
Total	36.8	63.2
S.E.	1.44	1.44
Unweighted n	2,109	2,109
Weighted n (in 1000s)	475	475
Construction, manufacturing, and transportation	20.4	79.6
S.E.	2.14	2.14
Unweighted n	1,532	1,532
Weighted n (in 1000s)	138	138
Wholesale/retail trade	38.7	61.3
S.E.	1.96	1.96
Unweighted n	193	193
Weighted n (in 1000s)	245	245
Services	56.1	43.9
S.E.	3.54	3.54
Unweighted n	384	384
Weighted n (in 1000s)	91	91

[1] For manufacturing establishments, the term "front-line workers" includes production workers; for other establishments, the term refers to sales and customer service workers.

[2] Certification, some college, 2-year degree, or 4-year degree or higher.

NOTE: The sample is made up of private, for-profit employers with 20 or more employees. Percentages may not add to 100 due to rounding. Row n's may not add to total n's because of missing data.

SOURCE: 1997 National Employer Survey, Phase II. Administered by the U.S. Bureau of the Census; designed and funded by the National Center on the Educational Quality of the Workforce at the University of Pennsylvania.

Table A7—Standard errors for table 12: Percentage distribution of employers reporting that the proficiency of front-line workers* has increased, decreased, or remained the same during the last 3 years, by firm revenues: 1997

1996 Firm revenues (in millions)	Increased	Decreased	Remained the same
Total	31.9	13.7	54.5
S.E.	1.50	1.10	1.60
Unweighted n	2,745	2,745	2,745
Weighted n (in 1000s)	587	587	587
Less than $1	15.2	22.1	62.8
S.E.	2.80	3.24	3.78
Unweighted n	128	128	128
Weighted n (in 1000s)	100	100	100
$1–10	33.5	10.1	56.4
S.E.	2.27	1.45	2.38
Unweighted n	640	640	640
Weighted n (in 1000s)	264	264	264
$10–100	35.7	14.4	49.8
S.E.	3.50	2.57	3.66
Unweighted n	1,050	1,050	1,050
Weighted n (in 1000s)	114	114	114
More than $100	38.6	6.7	54.7
S.E.	8.96	4.61	9.16
Unweighted n	516	516	516
Weighted n (in 1000s)	19	19	19

*For manufacturing establishments, the term "front-line workers" includes production workers; for other establishments, the term refers to sales and customer service workers.

NOTE: The sample is made up of private, for-profit employers with 20 or more employees. Percentages may not add to 100 due to rounding. Row n's may not add to total n's because of missing data.

SOURCE: 1997 National Employer Survey, Phase II. Administered by the U.S. Bureau of the Census; designed and funded by the National Center on the Educational Quality of the Workforce at the University of Pennsylvania.

Table A8—Standard errors for table 13: Among firms with employees with work-based learning (WBL) experience, percentage distribution of employers according to their evaluations of new front-line workers[1] with WBL experience[2] versus their non-WBL counterparts aged 18–25, by selected employee characteristics: 1997

Selected employee characteristics	Rated WBL employees the same	Rated WBL employees better	Rated WBL employees worse
Productivity	37.6	61.9	0.5
S.E.	2.67	2.68	0.40
Unweighted n	988	988	988
Weighted n (in 1000s)	200	200	200
Attitude	34.0	65.1	0.9
S.E.	2.61	2.63	0.51
Unweighted n	994	994	994
Weighted n (in 1000s)	200	200	200

[1] For manufacturing establishments, the term "front-line workers" includes production workers; for other establishments, the term refers to sales and customer service workers.

[2] The work-based learning experiences of these new front-line workers may have taken place at the current employer's firm or at another firm.

NOTE: The sample is made up of private, for-profit employers with 20 or more employees. Percentages may not add to 100 due to rounding. Row n's may not add to total n's because of missing data.

SOURCE: 1997 National Employer Survey, Phase II. Administered by the U.S. Bureau of the Census; designed and funded by the National Center on the Educational Quality of the Workforce at the University of Pennsylvania.

Table A9—Standard errors for table 14: Average number of Carnegie units accumulated by public high school graduates, by type of coursework: 1982, 1990, and 1994

Type of coursework	1982	1990	1994
Total	21.60	23.53	24.17
S.E.	0.080	0.129	0.156
Unweighted n	9,596	16,507	23,706
Weighted n (in 1000s)	2,606	2,505	2,213
Academic	14.28	16.66	17.58
S.E.	0.074	0.132	0.101
Unweighted n	9,596	16,507	23,706
Weighted n (in 1000s)	2,606	2,505	2,213
Vocational total	4.68	4.19	3.96
S.E.	0.059	0.088	0.068
Unweighted n	9,596	16,507	23,706
Weighted n (in 1000s)	2,606	2,505	2,213
Specific labor market preparation	3.03	2.89	2.79
S.E.	0.053	0.070	0.058
Unweighted n	9,596	16,507	23,706
Weighted n (in 1000s)	2,606	2,505	2,213
General labor market preparation	0.95	0.73	0.64
S.E.	0.018	0.029	0.020
Unweighted n	9,596	16,507	23,706
Weighted n (in 1000s)	2,606	2,505	2,213
Consumer and homemaking education	0.69	0.57	0.52
S.E.	0.017	0.030	0.028
Unweighted n	9,596	16,507	23,706
Weighted n (in 1000s)	2,606	2,505	2,213
Enrichment/other	2.64	2.68	2.63
S.E.	0.037	0.078	0.079
Unweighted n	9,596	16,507	23,706
Weighted n (in 1000s)	2,606	2,505	2,213

NOTE: Averages may not add to totals due to rounding. Row n's may not add to total n's because of missing data.

SOURCE: U.S. Department of Education, National Center for Education Statistics, High School and Beyond Sophomore Cohort 1982 High School Transcript Study and 1990 and 1994 National Assessment of Educational Progress High School Transcript Studies.

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Table A10—Standard errors for table 15: Percentage of public high school graduates concentrating (accumulating 3 or more credits) and specializing (accumulating 4 or more credits with 2 or more of those credits beyond the introductory level) in vocational programs: 1982, 1990, and 1994

Vocational completers	1982	1990	1994
Concentrators	33.7	27.8	25.4
S.E.	0.83	1.09	0.94
Unweighted n	9,596	16,507	23,706
Weighted n (in 1000s)	2,606	2,505	2,213
Specialists	12.6	7.7	7.0
S.E.	0.56	0.57	0.43
Unweighted n	9,596	16,507	23,706
Weighted n (in 1000s)	2,606	2,505	2,213

SOURCE: U.S. Department of Education, National Center for Education Statistics, High School and Beyond Sophomore Cohort 1982 High School Transcript Study and 1990 and 1994 National Assessment of Educational Progress High School Transcript Studies.

Table A11—Standard errors for table 16: Percentage of public high school graduates concentrating (accumulating 3 or more credits) in various vocational programs: 1982, 1990, and 1994

Year	Agriculture and renewable resources	Business	Marketing and distribution	Health care	Public and protective services	Trade and industry	Technology and communi-cations	Occupational home economics			
								Total	Personal and other services	Food service and hospitality	Child care and education
1982	2.8	11.6	1.8	0.6	0.0	14.8	0.5	1.7	1.3	0.2	0.2
S.E.	0.29	0.46	0.19	0.10	0.02	0.58	0.09	0.22	0.20	0.06	0.00
Unweighted n	9,596	9,596	9,596	9,596	9,596	9,596	9,596	9,596	9,596	9,596	9,596
Weighted n (in 1000s)	2,606	2,606	2,606	2,606	2,606	2,606	2,606	2,606	2,606	2,606	2,606
1990	2.5	8.4	2.1	0.6	0.0	11.2	0.8	2.0	1.3	0.5	0.3
S.E.	0.40	0.62	0.30	0.09	0.00	0.66	0.12	0.23	0.17	0.12	0.00
Unweighted n	16,507	16,507	16,507	16,507	16,507	16,507	16,507	16,507	16,507	16,507	16,507
Weighted n (in 1000s)	2,505	2,505	2,505	2,505	2,505	2,505	2,505	2,505	2,505	2,505	2,505
1994	3.2	7.7	2.2	1.0	0.0	8.5	0.9	2.0	1.1	0.4	0.6
S.E.	0.35	0.44	0.23	0.11	0.02	0.44	0.09	0.22	0.20	0.07	0.10
Unweighted n	23,706	23,706	23,706	23,706	23,706	23,706	23,706	23,706	23,706	23,706	23,706
Weighted n (in 1000s)	2,213	2,213	2,213	2,213	2,213	2,213	2,213	2,213	2,213	2,213	2,213

NOTE: Estimates appearing as 0.0 or 0.00 may be nonzero but less than 0.05 or 0.005.

SOURCE: U.S. Department of Education, National Center for Education Statistics, High School and Beyond Sophomore Cohort 1982 High School Transcript Study and 1990 and 1994 National Assessment of Educational Progress High School Transcript Studies.

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Table A12—Standard errors for table 17: Average number of Carnegie units accumulated by public high school graduates, by type of coursework and sex: 1982, 1990, and 1994

Type of coursework and sex	1982	1990	1994
Total	21.60	23.53	24.17
S.E.	0.080	0.129	0.156
Unweighted n	9,596	16,507	23,706
Weighted n (in 1000s)	2,606	2,505	2,213
Male	21.43	23.35	23.99
S.E.	0.098	0.134	0.155
Unweighted n	4,654	7,838	11,472
Weighted n (in 1000s)	1,257	1,194	1,083
Female	21.76	23.69	24.34
S.E.	0.089	0.132	0.162
Unweighted n	4,942	8,660	12,193
Weighted n (in 1000s)	1,349	1,309	1,126
Academic	14.28	16.66	17.58
S.E.	0.074	0.132	0.101
Unweighted n	9,596	16,507	23,706
Weighted n (in 1000s)	2,606	2,505	2,213
Male	14.00	16.17	17.03
S.E.	0.093	0.149	0.098
Unweighted n	4,654	7,838	11,472
Weighted n (in 1000s)	1,257	1,194	1,083
Female	14.55	17.10	18.11
S.E.	0.083	0.132	0.112
Unweighted n	4,942	8,660	12,193
Weighted n (in 1000s)	1,349	1,309	1,126
Vocational total	4.68	4.19	3.96
S.E.	0.059	0.088	0.068
Unweighted n	9,596	16,507	23,706
Weighted n (in 1000s)	2,606	2,505	2,213
Male	4.68	4.32	4.13
S.E.	0.075	0.092	0.074
Unweighted n	4,654	7,838	11,472
Weighted n (in 1000s)	1,257	1,194	1,083
Female	4.68	4.08	3.80
S.E.	0.067	0.095	0.073
Unweighted n	4,942	8,660	12,193
Weighted n (in 1000s)	1,349	1,309	1,126
Specific labor market preparation	3.03	2.89	2.79
S.E.	0.053	0.070	0.058
Unweighted n	9,596	16,507	23,706
Weighted n (in 1000s)	2,606	2,505	2,213

Table A12—Standard errors for table 17: Average number of Carnegie units accumulated by public high school graduates, by type of coursework and sex: 1982, 1990, and 1994—Continued

Type of coursework and sex	1982	1990	1994
Male	3.43	3.28	3.08
S.E.	0.074	0.078	0.064
Unweighted n	4,654	7,838	11,472
Weighted n (in 1000s)	1,257	1,194	1,083
Female	2.66	2.53	2.52
S.E.	0.053	0.079	0.061
Unweighted n	4,942	8,660	12,193
Weighted n (in 1000s)	1,349	1,309	1,126
General labor market preparation	0.95	0.73	0.64
S.E.	0.018	0.029	0.020
Unweighted n	9,596	16,507	23,706
Weighted n (in 1000s)	2,606	2,505	2,213
Male	0.94	0.70	0.70
S.E.	0.026	0.030	0.025
Unweighted n	4,654	7,838	11,472
Weighted n (in 1000s)	1,257	1,194	1,083
Female	0.97	0.76	0.58
S.E.	0.020	0.031	0.020
Unweighted n	4,942	8,660	12,193
Weighted n (in 1000s)	1,349	1,309	1,126
Consumer and homemaking education	0.69	0.57	0.52
S.E.	0.017	0.030	0.028
Unweighted n	9,596	16,507	23,706
Weighted n (in 1000s)	2,606	2,505	2,213
Male	0.31	0.33	0.35
S.E.	0.014	0.022	0.026
Unweighted n	4,654	7,838	11,472
Weighted n (in 1000s)	1,257	1,194	1,083
Female	1.05	0.79	0.70
S.E.	0.026	0.043	0.034
Unweighted n	4,942	8,660	12,193
Weighted n (in 1000s)	1,349	1,309	1,126
Enrichment/other	2.64	2.68	2.63
S.E.	0.037	0.078	0.079
Unweighted n	9,596	16,507	23,706
Weighted n (in 1000s)	2,606	2,505	2,213
Male	2.75	2.87	2.83
S.E.	0.043	0.084	0.082
Unweighted n	4,654	7,838	11,472
Weighted n (in 1000s)	1,257	1,194	1,083

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Table A12—Standard errors for table 17: Average number of Carnegie units accumulated by public high school graduates, by type of coursework and sex: 1982, 1990, and 1994—Continued

Type of coursework and sex	1982	1990	1994
Female	2.53	2.51	2.44
S.E.	0.040	0.076	0.079
Unweighted n	4,942	8,660	12,193
Weighted n (in 1000s)	1,349	1,309	1,126

NOTE: Averages may not add to totals due to rounding. Row n's may not add to total n's because of missing data.

SOURCE: U.S. Department of Education, National Center for Education Statistics, High School and Beyond Sophomore Cohort 1982 High School Transcript Study and 1990 and 1994 National Assessment of Educational Progress High School Transcript Studies.

Table A13—Standard errors for table 18: Average number of Carnegie units accumulated by public high school graduates in the vocational and specific labor market preparation curricula, by race–ethnicity: 1982, 1990, and 1994

	Vocational			Specific labor market preparation		
Race–ethnicity	1982	1990	1994	1982	1990	1994
Total	4.68	4.19	3.96	3.03	2.89	2.79
S.E.	0.059	0.088	0.068	0.053	0.070	0.058
Unweighted n	9,596	16,507	23,706	9,596	16,507	23,706
Weighted n (in 1000s)	2,606	2,505	2,213	2,606	2,505	2,213
American Indian/Alaskan Native	4.93	4.62	4.26	3.40	3.16	2.84
S.E.	0.221	0.192	0.258	0.232	0.156	0.175
Unweighted n	162	84	188	162	84	188
Weighted n (in 1000s)	30	12	17	30	12	17
Asian/Pacific Islander	3.31	3.07	3.01	2.01	2.07	2.13
S.E.	0.202	0.280	0.274	0.140	0.171	0.176
Unweighted n	301	682	1,215	301	682	1,215
Weighted n (in 1000s)	38	86	74	38	86	74
Black, non-Hispanic	4.81	4.41	4.29	2.90	2.79	2.94
S.E.	0.140	0.164	0.116	0.140	0.142	0.094
Unweighted n	1,337	2,324	3,953	1,337	2,324	3,953
Weighted n (in 1000s)	293	347	263	293	347	263
Hispanic	5.26	4.12	3.87	3.30	2.85	2.75
S.E.	0.106	0.159	0.114	0.100	0.131	0.113
Unweighted n	2,061	1,448	2,747	2,061	1,448	2,747
Weighted n (in 1000s)	307	194	168	307	194	168
White, non-Hispanic	4.59	4.22	3.96	3.02	2.97	2.81
S.E.	0.067	0.097	0.079	0.059	0.081	0.068
Unweighted n	5,656	11,403	14,526	5,656	11,403	14,526
Weighted n (in 1000s)	1,912	1,778	1,564	1,912	1,778	1,564

NOTE: Row n's may not add to total n's because of missing data.

SOURCE: U.S. Department of Education, National Center for Education Statistics, High School and Beyond Sophomore Cohort 1982 High School Transcript Study and 1990 and 1994 National Assessment of Educational Progress High School Transcript Studies.

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Table A14—Standard errors for table 19: Average number of Carnegie units accumulated by public high school graduates, by type of coursework and disability status: 1982, 1990, and 1994

Type of coursework and disability status	1982	1990	1994
Total	21.60	23.53	24.17
S.E.	0.080	0.129	0.156
Unweighted n	9,596	16,507	23,706
Weighted n (in 1000s)	2,606	2,505	2,213
Has disability	21.32	22.81	24.00
S.E.	0.130	0.220	0.283
Unweighted n	869	417	855
Weighted n (in 1000s)	226	64	82
No disability	21.63	23.54	24.18
S.E.	0.083	0.130	0.155
Unweighted n	8,679	16,090	22,851
Weighted n (in 1000s)	2,364	2,441	2,130
Academic	14.28	16.66	17.58
S.E.	0.074	0.132	0.101
Unweighted n	9,596	16,507	23,706
Weighted n (in 1000s)	2,606	2,505	2,213
Has disability	13.82	13.30	14.43
S.E.	0.161	0.274	0.173
Unweighted n	869	417	855
Weighted n (in 1000s)	226	64	82
No disability	14.34	16.74	17.70
S.E.	0.076	0.131	0.102
Unweighted n	8,679	16,090	22,851
Weighted n (in 1000s)	2,364	2,441	2,130
Vocational total	4.68	4.19	3.96
S.E.	0.059	0.088	0.068
Unweighted n	9,596	16,507	23,706
Weighted n (in 1000s)	2,606	2,505	2,213
Has disability	4.82	6.01	5.99
S.E.	0.119	0.272	0.188
Unweighted n	869	417	855
Weighted n (in 1000s)	226	64	82
No disability	4.66	4.14	3.88
S.E.	0.061	0.084	0.066
Unweighted n	8,679	16,090	22,851
Weighted n (in 1000s)	2,364	2,441	2,130
Specific labor market preparation	3.03	2.89	2.79
S.E.	0.053	0.070	0.058
Unweighted n	9,596	16,507	23,706
Weighted n (in 1000s)	2,606	2,505	2,213
Has disability	3.00	3.88	3.74
S.E.	0.112	0.274	0.175
Unweighted n	869	417	855
Weighted n (in 1000s)	226	64	82

Table A14—Standard errors for table 19: Average number of Carnegie units accumulated by public high school graduates, by type of coursework and disability status: 1982, 1990, and 1994—Continued

Type of coursework and disability status	1982	1990	1994
No disability	3.03	2.86	2.76
S.E.	0.055	0.068	0.057
Unweighted n	8,679	16,090	22,851
Weighted n (in 1000s)	2,364	2,441	2,130
General labor market preparation	0.95	0.73	0.64
S.E.	0.018	0.029	0.020
Unweighted n	9,596	16,507	23,706
Weighted n (in 1000s)	2,606	2,505	2,213
Has disability	1.05	1.28	1.45
S.E.	0.062	0.140	0.106
Unweighted n	869	417	855
Weighted n (in 1000s)	226	64	82
No disability	0.95	0.72	0.61
S.E.	0.018	0.028	0.021
Unweighted n	8,679	16,090	22,851
Weighted n (in 1000s)	2,364	2,441	2,130
Consumer and homemaking education	0.69	0.57	0.52
S.E.	0.017	0.030	0.028
Unweighted n	9,596	16,507	23,706
Weighted n (in 1000s)	2,606	2,505	2,213
Has disability	0.77	0.86	0.79
S.E.	0.042	0.059	0.063
Unweighted n	869	417	855
Weighted n (in 1000s)	226	64	82
No disability	0.69	0.56	0.51
S.E.	0.018	0.030	0.029
Unweighted n	8,679	16,090	22,851
Weighted n (in 1000s)	2,364	2,441	2,130
Enrichment/other	2.64	2.68	2.63
S.E.	0.037	0.078	0.079
Unweighted n	9,596	16,507	23,706
Weighted n (in 1000s)	2,606	2,505	2,213
Has disability	2.68	3.50	3.58
S.E.	0.081	0.185	0.187
Unweighted n	869	417	855
Weighted n (in 1000s)	226	64	82
No disability	2.63	2.66	2.60
S.E.	0.037	0.078	0.076
Unweighted n	8,679	16,090	22,851
Weighted n (in 1000s)	2,364	2,441	2,130

NOTE: Averages may not add to totals due to rounding. Row n's may not add to total n's because of missing data.

SOURCE: U.S. Department of Education, National Center for Education Statistics, High School and Beyond Sophomore Cohort 1982 High School Transcript Study and 1990 and 1994 National Assessment of Educational Progress High School Transcript Studies.

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Table A15—Standard errors for table 20: Average number of Carnegie units accumulated by public high school graduates, by grade point average (GPA) and type of coursework: 1982, 1990, and 1994

GPA and type of coursework	1982	1990	1994
Total	21.60	23.53	24.17
S.E.	0.080	0.129	0.156
Unweighted n	9,596	16,507	23,706
Weighted n (in 1000s)	2,606	2,505	2,213
GPA			
3.3 or more	22.93	24.66	25.35
S.E.	0.198	0.141	0.182
Unweighted n	1,516	2,745	4,700
Weighted n (in 1000s)	418	420	471
2.6–3.29	22.05	23.99	24.62
S.E.	0.101	0.134	0.163
Unweighted n	3,077	5,465	8,089
Weighted n (in 1000s)	846	820	768
1.6–2.59	21.08	22.99	23.39
S.E.	0.089	0.145	0.153
Unweighted n	4,343	7,588	10,040
Weighted n (in 1000s)	1,176	1,156	900
Less than 1.6	19.60	21.35	21.58
S.E.	0.183	0.211	0.204
Unweighted n	646	709	877
Weighted n (in 1000s)	166	109	74
Academic			
GPA			
3.3 or more	16.90	19.25	20.09
S.E.	0.165	0.185	0.134
Unweighted n	1,516	2,745	4,700
Weighted n (in 1000s)	418	420	471
2.6–3.29	14.88	17.48	18.13
S.E.	0.099	0.160	0.125
Unweighted n	3,077	5,465	8,089
Weighted n (in 1000s)	846	820	768
1.6–2.59	13.21	15.39	16.08
S.E.	0.086	0.131	0.095
Unweighted n	4,343	7,588	10,040
Weighted n (in 1000s)	1,176	1,156	900
Less than 1.6	12.30	13.85	14.22
S.E.	0.254	0.143	0.160
Unweighted n	646	709	877
Weighted n (in 1000s)	166	109	74

Table A15—Standard errors for table 20: Average number of Carnegie units accumulated by public high school graduates, by grade point average (GPA) and type of coursework: 1982, 1990, and 1994 —Continued

GPA and type of coursework	1982	1990	1994
Vocational total			
GPA			
3.3 or more	3.44	2.79	2.77
S.E.	0.113	0.107	0.082
Unweighted n	1,516	2,745	4,700
Weighted n (in 1000s)	418	420	471
2.6–3.29	4.46	3.82	3.84
S.E.	0.084	0.098	0.080
Unweighted n	3,077	5,465	8,089
Weighted n (in 1000s)	846	820	768
1.6–2.59	5.25	4.89	4.62
S.E.	0.070	0.093	0.076
Unweighted n	4,343	7,588	10,040
Weighted n (in 1000s)	1,176	1,156	900
Less than 1.6	4.88	4.97	4.78
S.E.	0.166	0.149	0.094
Unweighted n	646	709	877
Weighted n (in 1000s)	166	109	74
Specific labor market preparation			
GPA			
3.3 or more	2.11	1.90	1.95
S.E.	0.091	0.074	0.064
Unweighted n	1,516	2,745	4,700
Weighted n (in 1000s)	418	420	471
2.6–3.29	2.89	2.61	2.70
S.E.	0.073	0.071	0.064
Unweighted n	3,077	5,465	8,089
Weighted n (in 1000s)	846	820	768
1.6–2.59	3.44	3.40	3.28
S.E.	0.068	0.092	0.067
Unweighted n	4,343	7,588	10,040
Weighted n (in 1000s)	1,176	1,156	900
Less than 1.6	3.15	3.40	3.33
S.E.	0.155	0.125	0.095
Unweighted n	646	709	877
Weighted n (in 1000s)	166	109	74

Table A15—Standard errors for table 20: Average number of Carnegie units accumulated by public high school graduates, by grade point average (GPA) and type of coursework: 1982, 1990, and 1994 —Continued

GPA and type of coursework	1982	1990	1994
General labor market preparation			
GPA			
3.3 or more	0.80	0.57	0.49
S.E.	0.026	0.027	0.024
Unweighted n	1,516	2,745	4,700
Weighted n (in 1000s)	418	420	471
2.6–3.29	0.90	0.71	0.64
S.E.	0.024	0.033	0.022
Unweighted n	3,077	5,465	8,089
Weighted n (in 1000s)	846	820	768
1.6–2.59	1.05	0.81	0.71
S.E.	0.028	0.035	0.023
Unweighted n	4,343	7,588	10,040
Weighted n (in 1000s)	1,176	1,156	900
Less than 1.6	0.93	0.73	0.76
S.E.	0.060	0.035	0.062
Unweighted n	646	709	877
Weighted n (in 1000s)	166	109	74
Consumer and homemaking education			
GPA			
3.3 or more	0.53	0.32	0.33
S.E.	0.037	0.037	0.032
Unweighted n	1,516	2,745	4,700
Weighted n (in 1000s)	418	420	471
2.6–3.29	0.66	0.51	0.51
S.E.	0.029	0.035	0.034
Unweighted n	3,077	5,465	8,089
Weighted n (in 1000s)	846	820	768
1.6–2.59	0.76	0.68	0.62
S.E.	0.022	0.030	0.028
Unweighted n	4,343	7,588	10,040
Weighted n (in 1000s)	1,176	1,156	900
Less than 1.6	0.80	0.85	0.69
S.E.	0.058	0.059	0.054
Unweighted n	646	709	877
Weighted n (in 1000s)	166	109	74

Table A15—Standard errors for table 20: Average number of Carnegie units accumulated by public high school graduates, by grade point average (GPA) and type of coursework: 1982, 1990, and 1994 —Continued

GPA and type of coursework	1982	1990	1994
Enrichment/other			
GPA			
3.3 or more	2.58	2.62	2.50
S.E.	0.068	0.092	0.076
Unweighted n	1,516	2,745	4,700
Weighted n (in 1000s)	418	420	471
2.6–3.29	2.72	2.69	2.65
S.E.	0.048	0.076	0.084
Unweighted n	3,077	5,465	8,089
Weighted n (in 1000s)	846	820	768
1.6–2.59	2.63	2.71	2.69
S.E.	0.045	0.084	0.081
Unweighted n	4,343	7,588	10,040
Weighted n (in 1000s)	1,176	1,156	900
Less than 1.6	2.42	2.53	2.58
S.E.	0.078	0.106	0.120
Unweighted n	646	709	877
Weighted n (in 1000s)	166	109	74

NOTE: Averages may not add to totals due to rounding. Row n's may not add to total n's because of missing data.

SOURCE: U.S. Department of Education, National Center for Education Statistics, High School and Beyond Sophomore Cohort 1982 High School Transcript Study and 1990 and 1994 National Assessment of Educational Progress High School Transcript Studies.

Table A16—Standard errors for table 21: Average number of Carnegie units accumulated by public high school graduates in the vocational and specific labor market preparation curricula, by school urbanicity: 1982, 1990, and 1994

	Vocational total			Specific labor market preparation		
School urbanicity	1982	1990	1994	1982	1990	1994
Total	4.68	4.19	3.96	3.03	2.89	2.79
S.E.	0.059	0.088	0.068	0.053	0.070	0.058
Unweighted n	9,596	16,507	23,706	9,596	16,507	23,706
Weighted n (in 1000s)	2,606	2,505	2,213	2,606	2,505	2,213
Rural	5.23	4.66	4.68	3.32	3.22	3.25
S.E.	0.107	0.135	0.096	0.103	0.099	0.095
Unweighted n	2,868	7,657	9,175	2,868	7,657	9,175
Weighted n (in 1000s)	844	1,245	991	844	1,245	991
Urban	4.28	3.66	3.34	2.83	2.52	2.39
S.E.	0.130	0.126	0.111	0.115	0.106	0.089
Unweighted n	2,216	7,010	10,628	2,216	7,010	10,628
Weighted n (in 1000s)	501	978	879	501	978	879
Suburban	4.46	3.98	3.47	2.91	2.69	2.52
S.E.	0.082	0.193	0.114	0.069	0.144	0.083
Unweighted n	4,512	1,840	3,903	4,512	1,840	3,903
Weighted n (in 1000s)	1,261	282	342	1,261	282	342

NOTE: Row n's may not add to total n's because of missing data.

SOURCE: U.S. Department of Education, National Center for Education Statistics, High School and Beyond Sophomore Cohort 1982 High School Transcript Study and 1990 and 1994 National Assessment of Educational Progress High School Transcript Studies.

Table A17—Standard errors for table 22: Percentage of public high school graduates concentrating (accumulating 3 or more credits) and specializing (accumulating 4 or more credits with 2 or more of those credits beyond the introductory level) in vocational programs, by selected student and school characteristics: 1982, 1990, and 1994

Selected student and school characteristics	Vocational concentrators			Vocational specialists		
	1982	1990	1994	1982	1990	1994
Total	33.7	27.8	25.4	12.6	7.7	7.0
S.E.	0.83	1.09	0.94	0.56	0.57	0.43
Unweighted n	9,596	16,507	23,706	9,596	16,507	23,706
Weighted n (in 1000s)	2,606	2,505	2,213	2,606	2,505	2,213
Sex						
Male	39.0	32.3	28.8	14.9	9.2	8.5
S.E.	1.17	1.28	1.08	0.80	0.80	0.62
Unweighted n	4,654	7,838	11,472	4,654	7,838	11,472
Weighted n (in 1000s)	1,257	1,194	1,083	1,257	1,194	1,083
Female	28.7	23.6	22.2	10.5	6.4	5.6
S.E.	1.00	1.29	1.00	0.64	0.69	0.49
Unweighted n	4,942	8,660	12,193	4,942	8,660	12,193
Weighted n (in 1000s)	1,349	1,309	1,126	1,349	1,309	1,126
Race–ethnicity						
American Indian/Alaskan Native	46.6	38.0	20.9	6.2	12.4	2.5
S.E.	7.63	3.83	3.25	1.81	3.61	0.90
Unweighted n	162	84	188	162	84	188
Weighted n (in 1000s)	30	12	17	30	12	17
Asian/Pacific Islander	17.3	16.6	14.2	5.0	1.4	3.8
S.E.	2.80	3.75	2.82	1.71	0.40	1.00
Unweighted n	301	682	1,215	301	682	1,215
Weighted n (in 1000s)	38	86	74	38	86	74
Black, non-Hispanic	32.7	27.3	29.0	11.7	7.8	8.2
S.E.	2.21	2.33	1.70	1.46	1.07	0.96
Unweighted n	1,337	2,324	3,953	1,337	2,324	3,953
Weighted n (in 1000s)	293	347	263	293	347	263
Hispanic	37.7	27.9	24.9	13.2	7.2	6.5
S.E.	1.80	2.28	2.54	1.18	1.25	1.10
Unweighted n	2,061	1,448	2,747	2,061	1,448	2,747
Weighted n (in 1000s)	307	194	168	307	194	168
White, non-Hispanic	33.2	28.5	25.3	12.9	8.1	7.1
S.E.	0.96	1.21	1.13	0.66	0.67	0.52
Unweighted n	5,656	11,403	14,526	5,656	11,403	14,526
Weighted n (in 1000s)	1,912	1,778	1,564	1,912	1,778	1,564
Disability status						
Has disability	31.5	42.2	41.3	12.9	10.4	12.4
S.E.	2.04	4.16	2.90	1.49	2.89	1.34
Unweighted n	869	417	855	869	417	855
Weighted n (in 1000s)	226	64	82	226	64	82

Table A17—Standard errors for table 22: Percentage of public high school graduates concentrating (accumulating 3 or more credits) and specializing (accumulating 4 or more credits with 2 or more of those credits beyond the introductory level) in vocational programs, by selected student and school characteristics: 1982, 1990, and 1994—Continued

Selected student and school characteristics	Vocational concentrators			Vocational specialists		
	1982	1990	1994	1982	1990	1994
No disability	33.8	27.4	24.8	12.6	7.6	6.8
S.E.	0.84	1.07	0.92	0.59	0.55	0.42
Unweighted n	8,679	16,090	22,851	8,679	16,090	22,851
Weighted n (in 1000s)	2,364	2,441	2,130	2,364	2,441	2,130
Grade point average						
3.3 or more	19.8	13.6	14.6	7.4	3.0	2.8
S.E.	1.42	0.94	1.04	0.87	0.51	0.32
Unweighted n	1,516	2,745	4,700	1,516	2,745	4,700
Weighted n (in 1000s)	418	420	471	418	420	471
2.6–3.29	30.9	23.8	23.9	12.3	6.4	6.6
S.E.	1.21	1.10	1.08	0.87	0.60	0.44
Unweighted n	3,077	5,465	8,089	3,077	5,465	8,089
Weighted n (in 1000s)	846	820	768	846	820	768
1.6–2.59	40.3	35.1	31.8	14.5	10.2	9.5
S.E.	1.17	1.46	1.20	0.80	0.80	0.66
Unweighted n	4,343	7,588	10,040	4,343	7,588	10,040
Weighted n (in 1000s)	1,176	1,156	900	1,176	1,156	900
Less than 1.6	36.1	34.7	31.8	13.9	9.6	7.8
S.E.	2.66	2.52	2.32	1.67	1.57	1.20
Unweighted n	646	709	877	646	709	877
Weighted n (in 1000s)	166	109	74	166	109	74
School urbanicity						
Rural	38.3	32.1	31.9	13.7	8.5	9.1
S.E.	1.44	1.43	1.51	1.02	0.76	0.74
Unweighted n	2,868	7,657	9,175	2,868	7,657	9,175
Weighted n (in 1000s)	844	1,245	991	844	1,245	991
Suburban	31.8	26.5	22.3	12.7	10.4	6.5
S.E.	1.17	2.79	1.99	0.80	2.89	1.00
Unweighted n	4,512	1,840	3,903	4,512	1,840	3,903
Weighted n (in 1000s)	1,261	282	342	1,261	282	342
Urban	30.7	22.6	19.3	10.6	5.9	4.9
S.E.	1.96	1.74	1.43	1.20	0.73	0.55
Unweighted n	2,216	7,010	10,628	2,216	7,010	10,628
Weighted n (in 1000s)	501	978	879	501	978	879

NOTE: Row n's may not add to total n's because of missing data.

SOURCE: U.S. Department of Education, National Center for Education Statistics, High School and Beyond Sophomore Cohort 1982 High School Transcript Study and 1990 and 1994 National Assessment of Educational Progress High School Transcript Studies.

Table A18—Standard errors for table 23: Percentage of public high school graduates meeting the New Basics core academic standards,[1] by curriculum specialization in high school: 1982, 1990, and 1994

Curriculum specialization and New Basics core academic standards	1982	1990	1994
All graduates			
New Basics core academics total	13.0	38.1	50.2
S.E.	0.59	1.78	1.52
Unweighted n	9,596	16,507	23,706
Weighted n (in 1000s)	2,606	2,505	2,213
English - 4 years	62.7	83.6	88.6
S.E.	1.07	1.81	1.41
Unweighted n	9,596	16,507	23,706
Weighted n (in 1000s)	2,606	2,505	2,213
Mathematics - 3 years	46.1	72.2	81.0
S.E.	0.81	1.49	1.15
Unweighted n	9,596	16,507	23,706
Weighted n (in 1000s)	2,606	2,505	2,213
Science - 3 years	29.3	52.0	63.9
S.E.	0.76	1.39	1.22
Unweighted n	9,596	16,507	23,706
Weighted n (in 1000s)	2,606	2,505	2,213
Social studies - 3 years	67.8	85.8	89.4
S.E.	1.12	1.50	1.52
Unweighted n	9,596	16,507	23,706
Weighted n (in 1000s)	2,606	2,505	2,213
Vocational concentrators total[2]			
New Basics core academics total	5.0	18.5	33.2
S.E.	0.60	1.80	1.80
Unweighted n	3,155	4,457	5,889
Weighted n (in 1000s)	877	696	562
English - 4 years	57.7	78.7	88.7
S.E.	1.58	2.55	1.47
Unweighted n	3,155	4,457	5,889
Weighted n (in 1000s)	877	696	562
Mathematics - 3 years	29.3	57.1	70.7
S.E.	1.19	2.20	2.10
Unweighted n	3,155	4,457	5,889
Weighted n (in 1000s)	877	696	562
Science - 3 years	13.2	29.5	45.1
S.E.	0.89	2.00	1.90
Unweighted n	3,155	4,457	5,889
Weighted n (in 1000s)	877	696	562
Social studies - 3 years	62.1	77.4	84.1
S.E.	1.59	2.52	2.58
Unweighted n	3,155	4,457	5,889
Weighted n (in 1000s)	877	696	562
Vocational concentration only			
New Basics core academics total	4.5	12.2	21.7
S.E.	0.63	1.54	1.99
Unweighted n	3,089	3,951	4,780
Weighted n (in 1000s)	862	625	462

Table A18—Standard errors for table 23: Percentage of public high school graduates meeting the New Basics core academic standards,[1] by curriculum specialization in high school: 1982, 1990, and 1994—Continued

Curriculum specialization and New Basics core academic standards	1982	1990	1994
English - 4 years	56.9	76.3	86.3
S.E.	1.60	2.72	1.77
Unweighted n	3,089	3,951	4,780
Weighted n (in 1000s)	862	625	462
Mathematics - 3 years	28.1	52.3	64.3
S.E.	1.19	2.28	2.47
Unweighted n	3,089	3,951	4,780
Weighted n (in 1000s)	862	625	462
Science - 3 years	12.5	23.0	34.4
S.E.	0.88	1.94	2.29
Unweighted n	3,089	3,951	4,780
Weighted n (in 1000s)	862	625	462
Social studies - 3 years	61.9	76.5	82.5
S.E.	1.61	2.60	2.94
Unweighted n	3,089	3,951	4,780
Weighted n (in 1000s)	862	625	462
Both vocational concentration and college preparatory			
New Basics core academics total	38.3	74.3	86.0
S.E.	8.81	3.98	1.58
Unweighted n	66	506	1,109
Weighted n (in 1000s)	15	70	100
English - 4 years	100.0	100.0	100.0
S.E.	0.00	0.00	0.00
Unweighted n	66	506	1,109
Weighted n (in 1000s)	15	70	100
Mathematics - 3 years	100.0	100.0	100.0
S.E.	0.00	0.00	0.00
Unweighted n	66	506	1,109
Weighted n (in 1000s)	15	70	100
Science - 3 years	54.1	86.7	94.4
S.E.	9.83	2.69	0.89
Unweighted n	66	506	1,109
Weighted n (in 1000s)	15	70	100
Social studies - 3 years	76.0	84.8	91.4
S.E.	6.70	3.08	1.42
Unweighted n	66	506	1,109
Weighted n (in 1000s)	15	70	100
College preparatory			
New Basics core academics total	65.4	84.1	90.2
S.E.	2.54	2.30	1.18
Unweighted n	774	4,562	7,741
Weighted n (in 1000s)	212	649	712
English - 4 years	100.0	100.0	100.0
S.E.	0.00	0.00	0.00
Unweighted n	774	4,562	7,741
Weighted n (in 1000s)	212	649	712

Table A18—Standard errors for table 23: Percentage of public high school graduates meeting the New Basics core academic standards,[1] by curriculum specialization in high school: 1982, 1990, and 1994—Continued

Curriculum specialization and New Basics core academic standards	1982	1990	1994
Mathematics - 3 years	100.0	100.0	100.0
S.E.	0.00	0.00	0.00
Unweighted n	774	4,562	7,741
Weighted n (in 1000s)	212	649	712
Science - 3 years	86.0	91.5	95.1
S.E.	1.53	1.13	0.52
Unweighted n	774	4,562	7,741
Weighted n (in 1000s)	212	649	712
Social studies - 3 years	76.8	91.0	94.8
S.E.	2.34	1.94	1.08
Unweighted n	774	4,562	7,741
Weighted n (in 1000s)	212	649	712
Other/general			
New Basics core academics total	10.3	24.2	30.1
S.E.	0.60	1.99	1.80
Unweighted n	5,667	7,488	10,076
Weighted n (in 1000s)	1,517	1,161	938
English - 4 years	60.4	77.3	79.9
S.E.	1.20	2.93	2.53
Unweighted n	5,667	7,488	10,076
Weighted n (in 1000s)	1,517	1,161	938
Mathematics - 3 years	48.3	65.6	72.8
S.E.	1.03	2.00	1.52
Unweighted n	5,667	7,488	10,076
Weighted n (in 1000s)	1,517	1,161	938
Science - 3 years	30.6	43.5	51.4
S.E.	0.93	1.81	1.74
Unweighted n	5,667	7,488	10,076
Weighted n (in 1000s)	1,517	1,161	938
Social studies - 3 years	69.9	87.9	88.6
S.E.	1.22	1.12	1.68
Unweighted n	5,667	7,488	10,076
Weighted n (in 1000s)	1,517	1,161	938

[1] The New Basics core academic standards include 4 years of English and 3 years each of mathematics, science, and social studies.

[2] This category includes some vocational concentrators who also completed a college preparatory curriculum.

NOTE: Row n's may not add to total n's because of missing data.

SOURCE: U.S. Department of Education, National Center for Education Statistics, High School and Beyond Sophomore Cohort 1982 High School Transcript Study and 1990 and 1994 National Assessment of Educational Progress High School Transcript Studies.

Table A19—Standard errors for table 24: Percentage distribution of public high school graduates according to curriculum specialization in high school: 1982, 1990, and 1994

Curriculum specialization	1982	1990	1994
Total	100.0	100.0	100.0
S.E.	0.00	0.00	0.00
Unweighted n	9,596	16,507	23,706
Weighted n (in 1000s)	2,606	2,505	2,213
College preparatory only	8.1	25.9	32.2
S.E.	0.47	1.07	0.99
Unweighted n	9,596	16,507	23,706
Weighted n (in 1000s)	2,606	2,505	2,213
Vocational concentrators total*	33.7	27.8	25.4
S.E.	0.83	1.09	0.94
Unweighted n	9,596	16,507	23,706
Weighted n (in 1000s)	2,606	2,505	2,213
Vocational concentration only	33.1	25.0	20.9
S.E.	0.83	0.98	0.81
Unweighted n	9,596	16,507	23,706
Weighted n (in 1000s)	2,606	2,505	2,213
Both vocational concentration and college preparatory	0.6	2.8	4.5
S.E.	0.11	0.29	0.28
Unweighted n	9,596	16,507	23,706
Weighted n (in 1000s)	2,606	2,505	2,213
Other/general	58.2	46.3	42.4
S.E.	0.83	1.51	1.41
Unweighted n	9,596	16,507	23,706
Weighted n (in 1000s)	2,606	2,505	2,213

*Includes students who completed both a vocational concentration and a college preparatory curriculum.

NOTE: Percentages may not add to 100 due to rounding. Row n's may not add to total n's because of missing data.

SOURCE: U.S. Department of Education, National Center for Education Statistics, High School and Beyond Sophomore Cohort 1982 High School Transcript Study and 1990 and 1994 National Assessment of Educational Progress High School Transcript Studies.

Table A20—Standard errors for table 25: Average number of credits earned by public high school graduates in English, and the percentage of total English coursework earned in low-level courses (language skills, functional, and basic English), by curriculum specialization in high school: 1982, 1990, and 1994

Curriculum specialization	Total English credits	Low-level English credits	Percent of total English credits that are low-level[1]
		1982	
All graduates	3.93	0.36	8.8
S.E.	0.02	0.02	0.41
Unweighted n	9,596	9,596	9,596
Weighted n (in 1000s)	2,606	2,606	2,606
Vocational concentrators total[2]	3.79	0.40	10.5
S.E.	0.03	0.03	0.69
Unweighted n	3,155	3,155	3,155
Weighted n (in 1000s)	877	877	877
Vocational concentration only	3.79	0.41	10.60
S.E.	0.03	0.03	0.70
Unweighted n	3,089	3,089	3,089
Weighted n (in 1000s)	862	862	862
Both vocational concentration and college preparatory	4.21	0.16	3.40
S.E.	0.07	0.06	1.31
Unweighted n	66	66	66
Weighted n (in 1000s)	15	15	15
College preparatory	4.43	0.20	4.4
S.E.	0.05	0.03	0.70
Unweighted n	774	774	774
Weighted n (in 1000s)	212	212	212
Other/general	3.95	0.35	8.5
S.E.	0.02	0.02	0.47
Unweighted n	5,667	5,667	5,667
Weighted n (in 1000s)	1,517	1,517	1,517
		1990	
All graduates	4.19	0.40	9.2
S.E.	0.04	0.03	0.67
Unweighted n	16,507	16,507	16,507
Weighted n (in 1000s)	2,505	2,505	2,505
Vocational concentrators total[2]	4.02	0.57	13.8
S.E.	0.04	0.05	1.25
Unweighted n	4,457	4,457	4,457
Weighted n (in 1000s)	696	696	696

Table A20—Standard errors for table 25: Average number of credits earned by public high school graduates in English, and the percentage of total English coursework earned in low-level courses (language skills, functional, and basic English), by curriculum specialization in high school: 1982, 1990, and 1994—Continued

Curriculum specialization	Total English credits	Low-level English credits	Percent of total English credits that are low-level[1]
Vocational concentration only	4.00	0.63	5.60
S.E.	0.04	0.06	0.94
Unweighted n	3,951	3,951	3,951
Weighted n (in 1000s)	625	625	625
Both vocational concentration and college preparatory	4.21	0.07	0.80
S.E.	0.03	0.02	0.31
Unweighted n	506	506	506
Weighted n (in 1000s)	70	70	70
College preparatory	4.37	0.06	1.4
S.E.	0.03	0.01	0.24
Unweighted n	4,562	4,562	4,562
Weighted n (in 1000s)	649	649	649
Other/general	4.19	0.48	10.7
S.E.	0.06	0.04	0.79
Unweighted n	7,488	7,488	7,488
Weighted n (in 1000s)	1,161	1,161	1,161
		1994	
All graduates	4.29	0.40	8.9
S.E.	0.03	0.03	0.71
Unweighted n	23,706	23,706	23,706
Weighted n (in 1000s)	2,213	2,213	2,213
Vocational concentrators total[2]	4.16	0.51	11.9
S.E.	0.03	0.04	0.91
Unweighted n	5,889	5,889	5,889
Weighted n (in 1000s)	562	562	562
Vocational concentration only	4.13	0.60	13.90
S.E.	0.03	0.05	1.00
Unweighted n	4,780	4,780	4,780
Weighted n (in 1000s)	462	462	462
Both vocational concentration and college preparatory	4.26	0.12	2.80
S.E.	0.03	0.03	0.74
Unweighted n	1,109	1,109	1,109
Weighted n (in 1000s)	100	100	100

Table A20—Standard errors for table 25: Average number of credits earned by public high school graduates in English, and the percentage of total English coursework earned in low-level courses (language skills, functional, and basic English), by curriculum specialization in high school: 1982, 1990, and 1994—Continued

Curriculum specialization	Total English credits	Low-level English credits	Percent of total English credits that are low-level[1]
College preparatory	4.42	0.15	3.3
S.E.	0.03	0.03	0.72
Unweighted n	7,741	7,741	7,741
Weighted n (in 1000s)	712	712	712
Other/general	4.26	0.52	11.4
S.E.	0.04	0.04	0.89
Unweighted n	10,076	10,076	10,076
Weighted n (in 1000s)	938	938	938

[1] These percentages are the average rates calculated for each student in the population.

[2] This category includes some vocational concentrators who also completed a college preparatory curriculum.

NOTE: Row n's may not add to total n's because of missing data.

SOURCE: U.S. Department of Education, National Center for Education Statistics, High School and Beyond Sophomore Cohort 1982 High School Transcript Study and 1990 and 1994 National Assessment of Educational Progress High School Transcript Studies.

Table A21—Standard errors for table 26: Average number of Carnegie units accumulated by public high school graduates in social studies, by curriculum specialization in high school and type of social studies coursework: 1982, 1990, and 1994

Curriculum specialization and type of coursework	1982	1990	1994
All graduates			
Total social studies	3.14	3.47	3.55
S.E.	0.024	0.046	0.040
Unweighted n	9,596	16,507	23,706
Weighted n (in 1000s)	2,606	2,505	2,213
U.S./world history	1.41	1.68	1.74
S.E.	0.022	0.048	0.035
Unweighted n	9,596	16,507	23,706
Weighted n (in 1000s)	2,606	2,505	2,213
Vocational concentrators total*			
Total social studies	3.00	3.19	3.30
S.E.	0.036	0.054	0.048
Unweighted n	3,155	4,457	5,889
Weighted n (in 1000s)	877	696	562
U.S./world history	1.35	1.62	1.67
S.E.	0.030	0.057	0.039
Unweighted n	3,155	4,457	5,889
Weighted n (in 1000s)	877	696	562
Vocational concentration only			
Total social studies	3.00	3.18	3.26
S.E.	0.036	0.055	0.053
Unweighted n	3,089	3,951	4,780
Weighted n (in 1000s)	862	625	462
U.S./world history	1.34	1.59	1.64
S.E.	0.030	0.057	0.044
Unweighted n	3,089	3,951	4,780
Weighted n (in 1000s)	862	625	462
Both vocational concentration and college preparatory			
Total social studies	3.18	3.33	3.47
S.E.	0.107	0.079	0.047
Unweighted n	66	506	1,109
Weighted n (in 1000s)	15	70	100
U.S./world history	1.59	1.89	1.79
S.E.	0.106	0.071	0.035
Unweighted n	66	506	1,109
Weighted n (in 1000s)	15	70	100
College preparatory			
Total social studies	3.37	3.61	3.69
S.E.	0.082	0.054	0.040
Unweighted n	774	4,562	7,741
Weighted n (in 1000s)	212	649	712

Table A21—Standard errors for table 26: Average number of Carnegie units accumulated by public high school graduates in social studies, by curriculum specialization in high school and type of social studies coursework: 1982, 1990, and 1994—Continued

Curriculum specialization and type of coursework	1982	1990	1994
U.S./world history	1.73	1.87	1.86
S.E.	0.049	0.041	0.038
Unweighted n	774	4,562	7,741
Weighted n (in 1000s)	212	649	712
Other/general			
Total social studies	3.19	3.57	3.60
S.E.	0.025	0.054	0.049
Unweighted n	5,667	7,488	10,076
Weighted n (in 1000s)	1,517	1,161	938
U.S./world history	1.41	1.61	1.69
S.E.	0.023	0.061	0.045
Unweighted n	5,667	7,488	10,076
Weighted n (in 1000s)	1,517	1,161	938

*This category includes some vocational concentrators who also completed a college preparatory curriculum.

NOTE: Row n's may not add to total n's because of missing data.

SOURCE: U.S. Department of Education, National Center for Education Statistics, High School and Beyond Sophomore Cohort 1982 High School Transcript Study and 1990 and 1994 National Assessment of Educational Progress High School Transcript Studies.

Table A22—Standard errors for table 27: Percentage of high school graduates completing coursework in mathematics, by curriculum specialization in high school and type of mathematics coursework: 1982, 1990, and 1994

Curriculum specialization and type of coursework	1982	1990	1994
All graduates			
Total mathematics	99.7	100.0	100.0
S.E.	0.07	0.00	0.01
Unweighted n	9,596	16,507	23,706
Weighted n (in 1000s)	2,606	2,505	2,213
Algebra I	58.5	66.0	69.0
S.E.	0.90	1.98	1.46
Unweighted n	9,596	16,507	23,706
Weighted n (in 1000s)	2,606	2,505	2,213
Vocational concentrators total*			
Total mathematics	99.5	100.0	99.9
S.E.	0.20	0.00	0.02
Unweighted n	3,155	4 457	5,889
Weighted n (in 1000s)	877	696	562
Algebra I	51.8	58.8	66.6
S.E.	1.40	2.12	1.92
Unweighted n	3,155	4,457	5,889
Weighted n (in 1000s)	877	696	562
Vocational concentration only			
Total mathematics	99.5	100.0	99.9
S.E.	0.20	0.00	0.02
Unweighted n	3,089	3,951	4,780
Weighted n (in 1000s)	862	625	462
Algebra I	51.3	56.6	64.6
S.E.	1.37	2.12	2.04
Unweighted n	3,089	3,951	4,780
Weighted n (in 1000s)	862	625	462
Both vocational concentration and college preparatory			
Total mathematics	100.0	100.0	100.0
S.E.	0.00	0.00	0.00
Unweighted n	66	506	1,109
Weighted n (in 1000s)	15	70	100
Algebra I	81.5	77.7	75.7
S.E.	6.00	3.57	2.96
Unweighted n	66	506	1,109
Weighted n (in 1000s)	15	70	100
College preparatory			
Total mathematics	100.0	100.0	100.0
S.E.	0.00	0.00	0.00
Unweighted n	774	4,562	7,741
Weighted n (in 1000s)	212	649	712

Table A22—Standard errors for table 27: Percentage of high school graduates completing coursework in mathematics, by curriculum specialization in high school and type of mathematics coursework: 1982, 1990, and 1994—Continued

Curriculum specialization and type of coursework	1982	1990	1994
Algebra I	73.7	72.6	71.2
S.E.	2.59	3.26	1.63
Unweighted n	774	4,562	7,741
Weighted n (in 1000s)	212	649	712
Other/general			
Total mathematics	99.7	100.0	100.0
S.E.	0.08	0.00	0.01
Unweighted n	5,667	7,488	10,076
Weighted n (in 1000s)	1,517	1,161	938
Algebra I	60.2	66.6	68.8
S.E.	1.11	1.91	1.78
Unweighted n	5,667	7,488	10,076
Weighted n (in 1000s)	1,517	1,161	938

*This category includes some vocational concentrators who also completed a college preparatory curriculum.

NOTE: Row n's may not add to total n's because of missing data.

SOURCE: U.S. Department of Education, National Center for Education Statistics, High School and Beyond Sophomore Cohort 1982 High School Transcript Study and 1990 and 1994 National Assessment of Educational Progress High School Transcript Studies.

Table A23—Standard errors for table 28: Average number of credits earned by public high school graduates in mathematics, and the percentage of total mathematics coursework earned in below-algebra courses, by curriculum specialization in high school: 1982, 1990, and 1994

Curriculum specialization	Total mathematics credits	Below-algebra credits	Percent of total mathematics credits that are below algebra[1]
		1982	
All graduates	2.62	0.83	37.3
S.E.	0.019	0.018	0.71
Unweighted n	9,596	9,596	9,561
Weighted n (in 1000s)	2,606	2,606	2,598
Vocational concentrators total[2]	2.25	0.95	46.8
S.E.	0.034	0.027	1.09
Unweighted n	3,155	3,155	3,136
Weighted n (in 1000s)	877	877	873
Vocational concentration only	2.23	0.97	47.6
S.E.	0.035	0.027	1.10
Unweighted n	3,089	3,089	3,070
Weighted n (in 1000s)	862	862	858
Both vocational concentration and college preparatory	3.52	0.13	3.2
S.E.	0.083	0.050	1.19
Unweighted n	66	66	66
Weighted n (in 1000s)	15	15	15
College preparatory	3.84	0.15	3.4
S.E.	0.035	0.023	0.49
Unweighted n	774	774	774
Weighted n (in 1000s)	212	212	212
Other/general	2.66	0.85	36.6
S.E.	0.021	0.022	0.81
Unweighted n	5,667	5,667	5,651
Weighted n (in 1000s)	1,517	1,517	1,513
		1990	
All graduates	3.15	0.81	29.5
S.E.	0.028	0.033	1.12
Unweighted n	16,507	16,507	16,507
Weighted n (in 1000s)	2,505	2,505	2,505
Vocational concentrators total[2]	2.80	1.15	44.4
S.E.	0.034	0.045	1.70
Unweighted n	4,457	4,457	4,457
Weighted n (in 1000s)	696	696	696

Table A23—Standard errors for table 28: Average number of credits earned by public high school graduates in mathematics, and the percentage of total mathematics coursework earned in below-algebra courses, by curriculum specialization in high school: 1982, 1990, and 1994—Continued

Curriculum specialization	Total mathematics credits	Below-algebra credits	Percent of total mathematics credits that are below algebra[1]
Vocational concentration only	2.70	1.26	49.0
S.E.	0.031	0.049	1.77
Unweighted n	3,951	3,951	3,951
Weighted n (in 1000s)	625	625	625
Both vocational concentration and college preparatory	3.67	0.15	3.7
S.E.	0.041	0.026	0.61
Unweighted n	506	506	506
Weighted n (in 1000s)	70	70	70
College preparatory	3.79	0.12	2.9
S.E.	0.018	0.011	0.20
Unweighted n	4,562	4,562	4,562
Weighted n (in 1000s)	649	649	649
Other/general	3.00	0.99	35.3
S.E.	0.036	0.048	1.52
Unweighted n	7,488	7,488	7,488
Weighted n (in 1000s)	1,161	1,161	1,161
		1994	
All graduates	3.33	0.68	23.4
S.E.	0.022	0.028	0.92
Unweighted n	23,706	23,706	23,706
Weighted n (in 1000s)	2,213	2,213	2,213
Vocational concentrators total[2]	3.01	0.95	34.6
S.E.	0.030	0.038	1.34
Unweighted n	5,889	5,889	5,889
Weighted n (in 1000s)	562	562	562
Vocational concentration only	2.87	1.14	41.6
S.E.	0.035	0.046	1.61
Unweighted n	4,780	4,780	4,780
Weighted n (in 1000s)	462	462	462
Both vocational concentration and college preparatory	3.70	0.10	2.5
S.E.	0.035	0.014	0.32
Unweighted n	1,109	1,109	1,109
Weighted n (in 1000s)	100	100	100

Table A23—Standard errors for table 28: Average number of credits earned by public high school graduates in mathematics, and the percentage of total mathematics coursework earned in below-algebra courses, by curriculum specialization in high school: 1982, 1990, and 1994—Continued

Curriculum specialization	Total mathematics credits	Below-algebra credits	Percent of total mathematics credits that are below algebra[1]
College preparatory	3.86	0.11	2.6
S.E.	0.022	0.008	0.19
Unweighted n	7,741	7,741	7,741
Weighted n (in 1000s)	712	712	712
Other/general	3.12	0.96	32.5
S.E.	0.030	0.043	1.35
Unweighted n	10,076	10,076	10,076
Weighted n (in 1000s)	938	938	938

[1] These percentages are the average rates calculated for each student in the population.

[2] This category includes some vocational concentrators who also completed a college preparatory curriculum.

NOTE: Row n's may not add to total n's because of missing data.

SOURCE: U.S. Department of Education, National Center for Education Statistics, High School and Beyond Sophomore Cohort 1982 High School Transcript Study and 1990 and 1994 National Assessment of Educational Progress High School Transcript Studies.

Table A24—Standard errors for table 29: Average number of credits earned by public high school graduates in science, and the percentage of total science coursework earned at the basic level, by curriculum specialization in high school: 1982, 1990, and 1994

Curriculum specialization and type of coursework	Total science credits	Biology, chemistry, physics credits	Biology credits	Basic-level science credits	Percent of total science credits earned at basic level[1]
			1982		
All graduates	2.17	1.42	0.93	0.62	32.0
S.E.	0.022	0.021	0.013	0.018	1.00
Unweighted n	9,596	9,596	9,596	9,596	9,374
Weighted n (in 1000s)	2,606	2,606	2,606	2,606	2,543
Vocational concentrators total[2]	1.74	0.96	0.73	0.59	36.5
S.E.	0.030	0.027	0.017	0.024	1.46
Unweighted n	3,155	3,155	3,155	3,155	3,035
Weighted n (in 1000s)	877	877	877	877	844
Vocational concentration only	1.72	0.93	0.73	0.59	36.8
S.E.	0.030	0.027	0.017	0.024	1.47
Unweighted n	3,089	3,089	3,089	3,089	2,969
Weighted n (in 1000s)	862	862	862	862	829
Both vocational concentration and college preparatory	2.81	2.41	1.18	0.64	20.8
S.E.	0.174	0.114	0.067	0.149	4.38
Unweighted n	66	66	66	66	66
Weighted n (in 1000s)	15	15	15	15	15
College preparatory	3.56	2.95	1.37	0.72	20.6
S.E.	0.045	0.042	0.033	0.046	1.29
Unweighted n	774	774	774	774	774
Weighted n (in 1000s)	212	212	212	212	212
Other/general	2.23	1.48	0.98	0.62	31.1
S.E.	0.025	0.025	0.015	0.020	1.01
Unweighted n	5,667	5,667	5,667	5,667	5,565
Weighted n (in 1000s)	1,517	1,517	1,517	1,517	1,487
			1990		
All graduates	2.75	1.90	1.14	0.45	18.7
S.E.	0.028	0.030	0.018	0.027	1.10
Unweighted n	16,507	16,507	16,507	16,507	16,507
Weighted n (in 1000s)	2,505	2,505	2,505	2,505	2,505
Vocational concentrators total[2]	2.26	1.34	1.00	0.50	23.8
S.E.	0.041	0.041	0.026	0.033	1.72
Unweighted n	4,457	4,457	4,457	4,457	4,457
Weighted n (in 1000s)	696	696	696	696	696

Table A24—Standard errors for table 29: Average number of credits earned by public high school graduates in science, and the percentage of total science coursework earned at the basic level, by curriculum specialization in high school: 1982, 1990, and 1994—Continued

Curriculum specialization and type of coursework	Total science credits	Biology, chemistry, physics credits	Biology credits	Basic-level science credits	Percent of total science credits earned at basic level[1]
Vocational concentration only	2.15	1.19	0.97	0.51	25.1
S.E.	0.038	0.035	0.026	0.033	1.80
Unweighted n	3,951	3,951	3,951	3,951	3,951
Weighted n (in 1000s)	625	625	625	625	625
Both vocational concentration and college preparatory	3.30	2.63	1.24	0.39	11.9
S.E.	0.051	0.053	0.035	0.067	2.08
Unweighted n	506	506	506	506	506
Weighted n (in 1000s)	70	70	70	70	70
College preparatory	3.56	2.91	1.33	0.30	8.7
S.E.	0.038	0.037	0.029	0.037	1.07
Unweighted n	4,562	4,562	4,562	4,562	4,562
Weighted n (in 1000s)	649	649	649	649	649
Other/general	2.60	1.67	1.12	0.50	21.2
S.E.	0.039	0.041	0.022	0.028	1.21
Unweighted n	7,488	7,488	7,488	7,488	7,488
Weighted n (in 1000s)	1,161	1,161	1,161	1,161	1,161
			1994		
All graduates	3.04	2.15	1.26	0.46	16.9
S.E.	0.029	0.025	0.017	0.024	0.84
Unweighted n	23,706	23,706	23,706	23,706	23,706
Weighted n (in 1000s)	2,213	2,213	2,213	2,213	2,213
Vocational concentrators total[2]	2.59	1.61	1.13	0.50	20.9
S.E.	0.034	0.032	0.022	0.032	1.30
Unweighted n	5,889	5,889	5,889	5,889	5,889
Weighted n (in 1000s)	562	562	562	562	562
Vocational concentration only	2.39	1.38	1.09	0.54	23.3
S.E.	0.038	0.035	0.024	0.035	1.48
Unweighted n	4,780	4,780	4,780	4,780	4,780
Weighted n (in 1000s)	462	462	462	462	462
Both vocational concentration and college preparatory	3.49	2.68	1.32	0.35	9.8
S.E.	0.054	0.047	0.027	0.038	1.10
Unweighted n	1,109	1,109	1,109	1,109	1,109
Weighted n (in 1000s)	100	100	100	100	100

Table A24—Standard errors for table 29: Average number of credits earned by public high school graduates in science, and the percentage of total science coursework earned at the basic level, by curriculum specialization in high school: 1982, 1990, and 1994—Continued

Curriculum specialization and type of coursework	Total science credits	Biology, chemistry, physics credits	Biology credits	Basic-level science credits	Percent of total science credits earned at basic level[1]
College preparatory	3.78	3.07	1.46	0.35	9.6
S.E.	0.036	0.029	0.019	0.032	0.90
Unweighted n	7,741	7,741	7,741	7,741	7,741
Weighted n (in 1000s)	712	712	712	712	712
Other/general	2.76	1.78	1.18	0.51	20.0
S.E.	0.037	0.031	0.022	0.026	1.02
Unweighted n	10,076	10,076	10,076	10,076	10,076
Weighted n (in 1000s)	938	938	938	938	938

[1] These percentages are the average rates calculated for each student in the population.

[2] This category includes some vocational concentrators who also completed a college preparatory curriculum.

NOTE: Row n's may not add to total n's because of missing data.

SOURCE: U.S. Department of Education, National Center for Education Statistics, High School and Beyond Sophomore Cohort 1982 High School Transcript Study and 1990 and 1994 National Assessment of Educational Progress High School Transcript Studies.

Table A25—Standard errors for table 30: Percentage of public high school graduates completing coursework in chemistry and physics, by curriculum specialization in high school: 1982, 1990, and 1994

Curriculum specialization and type of coursework	1982	1990	1994
All graduates			
Chemistry	31.5	49.7	57.4
S.E.	0.74	1.31	1.01
Unweighted n	9,596	16,507	23,706
Weighted n (in 1000s)	2,606	2,505	2,213
Physics	16.7	23.1	27.4
S.E.	0.69	0.93	1.07
Unweighted n	9,596	16,507	23,706
Weighted n (in 1000s)	2,606	2,505	2,213
Vocational concentrators total*			
Chemistry	15.0	24.6	34.6
S.E.	0.97	1.38	1.46
Unweighted n	3,155	4,457	5,889
Weighted n (in 1000s)	877	696	562
Physics	7.8	9.7	13.0
S.E.	0.94	1.02	1.06
Unweighted n	3,155	4,457	5,889
Weighted n (in 1000s)	877	696	562
Vocational concentration only			
Chemistry	13.7	17.0	22.7
S.E.	1.00	1.12	1.41
Unweighted n	3,089	3,951	4,780
Weighted n (in 1000s)	862	625	462
Physics	7.4	6.6	7.6
S.E.	1.00	0.88	0.96
Unweighted n	3,089	3,951	4,780
Weighted n (in 1000s)	862	625	462
Both vocational concentration and college preparatory			
Chemistry	88.8	92.0	89.6
S.E.	5.08	1.34	1.70
Unweighted n	66	506	1,109
Weighted n (in 1000s)	15	70	100
Physics	29.8	37.4	38.0
S.E.	7.19	3.44	2.81
Unweighted n	66	506	1,109
Weighted n (in 1000s)	15	70	100
College preparatory			
Chemistry	89.2	94.9	94.1
S.E.	1.58	0.80	0.52
Unweighted n	774	4,562	7,741
Weighted n (in 1000s)	212	649	712

Table A25—Standard errors for table 30: Percentage of public high school graduates completing coursework in chemistry and physics, by curriculum specialization in high school: 1982, 1990, and 1994—Continued

Curriculum specialization and type of coursework	1982	1990	1994
Physics	53.7	50.4	52.3
S.E.	2.70	1.88	1.40
Unweighted n	774	4,562	7,741
Weighted n (in 1000s)	212	649	712
Other/general			
Chemistry	32.9	39.5	43.1
S.E.	0.96	1.84	1.36
Unweighted n	5,667	7,488	10,076
Weighted n (in 1000s)	1,517	1,161	938
Physics	16.8	16.0	17.1
S.E.	0.76	1.19	1.47
Unweighted n	5,667	7,488	10,076
Weighted n (in 1000s)	1,517	1,161	938

*This category includes some vocational concentrators who also completed a college preparatory curriculum.

NOTE: Row n's may not add to total n's because of missing data.

SOURCE: U.S. Department of Education, National Center for Education Statistics, High School and Beyond Sophomore Cohort 1982 High School Transcript Study and 1990 and 1994 National Assessment of Educational Progress High School Transcript Studies.

Table A26—Standard errors for table 31: Percentage distribution of 1988 8th graders according to subsequent specialization in high school, by 8th-grade composite test score quartiles: 1992

Test score quartile	College preparatory only	Vocational concentrators Total*	Vocational concentrators Vocational concentration only	Vocational concentrators Vocational concentration and college preparatory	Other/ general
Total	28.5	25.0	21.7	3.4	46.4
S.E.	1.02	0.79	0.74	0.27	1.05
Unweighted n	11,780	11,780	11,780	11,780	11,780
Weighted n (in 1000s)	2,173	2,173	2,173	2,173	2,173
1st quartile (lowest)	5.3	33.7	33.2	0.5	61.0
S.E.	0.69	2.02	2.01	0.15	2.02
Unweighted n	1,771	1,771	1,771	1,771	1,771
Weighted n (in 1000s)	337	337	337	337	337
2nd quartile	14.8	29.3	26.6	2.7	55.8
S.E.	1.14	1.68	1.53	0.49	2.12
Unweighted n	2,446	2,446	2,446	2,446	2,446
Weighted n (in 1000s)	448	448	448	448	448
3rd quartile	32.6	26.1	21.9	4.3	41.3
S.E.	1.60	1.41	1.35	0.50	1.51
Unweighted n	2,952	2,952	2,952	2,952	2,952
Weighted n (in 1000s)	527	527	527	527	527
4th quartile (highest)	55.7	12.3	7.6	4.7	32.0
S.E.	1.90	0.86	0.67	0.48	1.72
Unweighted n	3,157	3,157	3,157	3,157	3,157
Weighted n (in 1000s)	551	551	551	551	551

*Includes students who completed both a vocational concentration and a college preparatory curriculum.

NOTE: Percentages may not add to 100 due to rounding. Row n's may not add to total n's because of missing data.

SOURCE: U.S. Department of Education, National Center for Education Statistics, National Education Longitudinal Study of 1988, Second Follow-up and High School Transcript Study.

Table A.27—Standard errors for table 32a: Average number of credits earned by 1992 public high school graduates in various English courses and average number and percentage of credits earned in low-level courses,[1] by curriculum specialization in high school

Curriculum specialization	Average number of total credits	Average number of advanced credits	Average number of low-level credits	Percent of total credits that are low-level[2]
Total	4.23	0.52	0.37	8.5
S.E.	0.019	0.025	0.018	0.41
Unweighted n	11,780	11,780	11,780	11,780
Weighted n (in 1000s)	2,173	2,173	2,173	2,173
College preparatory only	4.40	1.15	0.08	1.7
S.E.	0.020	0.056	0.014	0.29
Unweighted n	3,544	3,544	3,544	3,544
Weighted n (in 1000s)	620	620	620	620
Vocational concentrators total[3]	4.10	0.24	0.60	14.5
S.E.	0.030	0.022	0.040	0.93
Unweighted n	2,964	2,964	2,964	2,964
Weighted n (in 1000s)	544	544	544	544
Vocational concentration only	4.07	0.15	0.67	16.1
S.E.	0.033	0.019	0.044	1.03
Unweighted n	2,546	2,546	2,546	2,546
Weighted n (in 1000s)	470	470	470	470
Both vocational concentration and college preparatory	4.35	0.88	0.19	4.0
S.E.	0.048	0.098	0.068	1.53
Unweighted n	418	418	418	418
Weighted n (in 1000s)	73	73	73	73
Other/general	4.20	0.28	0.41	9.4
S.E.	0.029	0.028	0.025	0.56
Unweighted n	5,272	5,272	5,272	5,272
Weighted n (in 1000s)	1,009	1,009	1,009	1,009

[1] These include language skills and functional and basic English courses.

[2] These percentages are the average rates calculated for each student in the population.

[3] Includes students who completed both a vocational concentration and a college preparatory curriculum.

NOTE: Row n's may not add to total n's because of missing data.

SOURCE: U.S. Department of Education, National Center for Education Statistics, National Education Longitudinal Study of 1988, Second Follow-up and High School Transcript Study.

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Table A28—Standard errors for table 32b: Average number of credits earned by 1992 public high school graduates in various mathematics courses and average number and percentage of credits earned in low-level courses,[1] by curriculum specialization in high school

Curriculum specialization	Average number of total credits	Average number of precalculus credits	Average number of low-level credits	Percent of total credits that are low-level[2]
Total	3.22	0.82	0.71	25.2
S.E.	0.019	0.017	0.019	0.68
Unweighted n	11,780	11,780	11,780	11,768
Weighted n (in 1000s)	2,173	2,173	2,173	2,171
College preparatory only	3.84	1.57	0.10	2.4
S.E.	0.016	0.023	0.009	0.21
Unweighted n	3,544	3,544	3,544	3,544
Weighted n (in 1000s)	620	620	620	620
Vocational concentrators total[3]	2.86	0.49	1.02	39.4
S.E.	0.033	0.021	0.033	1.20
Unweighted n	2,964	2,964	2,964	2,960
Weighted n (in 1000s)	544	544	544	543
Vocational concentration only	2.73	0.33	1.16	45.2
S.E.	0.034	0.018	0.035	1.27
Unweighted n	2,546	2,546	2,546	2,542
Weighted n (in 1000s)	470	470	470	470
Both vocational concentration and college preparatory	3.71	1.53	0.10	2.4
S.E.	0.047	0.045	0.018	0.43
Unweighted n	418	418	418	418
Weighted n (in 1000s)	73	73	73	73
Other/general	3.04	0.54	0.91	31.6
S.E.	0.022	0.018	0.027	0.99
Unweighted n	5,272	5,272	5,272	5,264
Weighted n (in 1000s)	1,009	1,009	1,009	1,008

[1] These include general and consumer mathematics and pre-algebra courses.

[2] These percentages are the average rates calculated for each student in the population.

[3] Includes students who completed both a vocational concentration and a college preparatory curriculum.

NOTE: Row n's may not add to total n's because of missing data.

SOURCE: U.S. Department of Education, National Center for Education Statistics, National Education Longitudinal Study of 1988, Second Follow-up and High School Transcript Study.

Table A29—Standard errors for table 32c: Average number of credits earned by 1992 public high school graduates in science and physics courses, by curriculum specialization in high school

Curriculum specialization	Average number of science credits	Average number of physics credits
Total	2.89	0.26
S.E.	0.027	0.010
Unweighted n	11,780	11,780
Weighted n (in 1000s)	2,173	2,173
College preparatory only	3.66	0.54
S.E.	0.046	0.023
Unweighted n	3,544	3,544
Weighted n (in 1000s)	620	620
Vocational concentrators total*	2.47	0.13
S.E.	0.040	0.012
Unweighted n	2,964	2,964
Weighted n (in 1000s)	544	544
Vocational concentration only	2.30	0.08
S.E.	0.040	0.010
Unweighted n	2,546	2,546
Weighted n (in 1000s)	470	470
Both vocational concentration and college preparatory	3.53	0.44
S.E.	0.073	0.039
Unweighted n	418	418
Weighted n (in 1000s)	73	73
Other/general	2.63	0.16
S.E.	0.025	0.009
Unweighted n	5,272	5,272
Weighted n (in 1000s)	1,009	1,009

*Includes students who completed both a vocational concentration and a college preparatory curriculum.

NOTE: Row n's may not add to total n's because of missing data.

SOURCE: U.S. Department of Education, National Center for Education Statistics, National Education Longitudinal Study of 1988, Second Follow-up and High School Transcript Study.

Table A30—Standard errors for table 33: Average 8–10th, 10–12th, and 8–12th grade test score gains in reading, mathematics, and science for 1992 public high school graduates, by curriculum specialization in high school

	8–10th			10–12th			8–12th		
Curriculum specialization	Reading	Math	Science	Reading	Math	Science	Reading	Math	Science
Total	8.5	14.2	0.2	11.5	11.4	9.3	20.0	25.6	9.4
S.E.	0.11	0.15	0.08	0.14	0.12	0.08	0.19	0.19	0.09
Unweighted n	9,777	9,763	9,701	9,135	9,133	9,037	8,695	8,693	8,634
Weighted n (in 1000s)	1,724	1,721	1,703	1,590	1,586	1,571	1,535	1,532	1,520
College preparatory only	10.3	16.7	0.7	12.8	13.2	10.0	23.1	29.8	10.6
S.E.	0.16	0.25	0.09	0.21	0.21	0.12	0.19	0.30	0.17
Unweighted n	3,072	3,072	3,056	2,912	2,912	2,890	2,793	2,791	2,775
Weighted n (in 1000s)	526	526	520	494	494	491	477	474	471
Vocational concentrators total*	7.3	12.8	-0.2	10.5	10.2	8.9	17.9	23.0	8.7
S.E.	0.17	0.22	0.11	0.18	0.19	0.10	0.22	0.29	0.14
Unweighted n	2,431	2,425	2,405	2,235	2,236	2,207	2,118	2,115	2,101
Weighted n (in 1000s)	418	417	413	375	375	370	361	360	358
Vocational concentration only	6.9	12.3	-0.4	10.3	9.7	8.8	17.2	22.0	8.5
S.E.	0.18	0.24	0.12	0.19	0.20	0.11	0.25	0.32	0.15
Unweighted n	2,068	2,062	2,045	1,894	1,895	1,868	1,791	1,788	1,779
Weighted n (in 1000s)	360	359	355	319	319	315	308	307	306
Both vocational concentration and college preparatory	9.8	15.9	0.7	11.6	12.8	9.3	21.6	28.5	10.1
S.E.	0.36	0.38	0.26	0.44	0.31	0.26	0.45	0.45	0.29
Unweighted n	363	363	360	341	341	339	327	327	322
Weighted n (in 1000s)	58	58	58	56	56	56	53	53	52
Other/general	8.0	13.3	0.0	11.0	10.9	9.0	19.0	24.1	9.1
S.E.	0.17	0.24	0.14	0.22	0.19	0.14	0.32	0.30	0.12
Unweighted n	4,274	4,266	4,240	3,988	3,985	3,940	3,784	3,787	3,758
Weighted n (in 1000s)	780	778	771	720	717	710	698	698	691

*Includes students who completed both a vocational concentration and a college preparatory curriculum.

NOTE: Row n's may not add to total n's because of missing data. Estimates appearing as 0.0 may be nonzero but less than 0.05.

SOURCE: U.S. Department of Education, National Center for Education Statistics, National Education Longitudinal Study of 1988, Second Follow-up and High School Transcript Study.

Table A31—Standard errors for table 34: Average 8–10th, 10–12th, and 8–12th grade test score gains in mathematics for 1992 public high school graduates according to 8th-grade mathematics test score quartiles, by curriculum specialization in high school

	Lowest quartile			Middle two quartiles			Highest quartile		
Curriculum specialization	8–10th	10–12th	8–12th	8–10th	10–12th	8–12th	8–10th	10–12th	8–12th
Total	11.9	9.0	20.8	14.0	11.0	25.1	15.9	13.5	29.2
S.E.	0.22	0.18	0.28	0.25	0.18	0.22	0.11	0.23	0.39
Unweighted n	1,642	1,396	1,487	4,995	4,266	4,418	3,126	2,703	2,788
Weighted n (in 1000s)	300	254	275	894	746	780	527	453	477
College preparatory only	16.0	11.6	27.6	17.0	11.9	29.2	16.4	14.2	30.5
S.E.	0.92	0.63	1.09	0.51	0.23	0.34	0.15	0.40	0.48
Unweighted n	124	113	118	1,283	1,141	1,178	1,665	1,447	1,495
Weighted n (in 1000s)	23	21	22	217	187	193	287	248	259
Vocational concentrators total*	10.7	8.6	19.3	12.9	10.2	22.9	14.9	12.4	27.6
S.E.	0.32	0.23	0.40	0.31	0.30	0.37	0.29	0.35	0.48
Unweighted n	578	487	511	1,370	1,136	1,180	477	418	424
Weighted n (in 1000s)	100	84	89	238	189	199	80	70	73
Vocational concentration only	10.6	8.5	19.0	12.5	9.9	22.3	14.4	11.6	26.4
S.E.	0.32	0.23	0.39	0.34	0.33	0.41	0.40	0.47	0.68
Unweighted n	562	473	497	1,196	990	1,027	304	259	264
Weighted n (in 1000s)	97	81	86	209	166	174	53	44	47
Both vocational concentration and college preparatory	—	—	—	15.9	12.0	27.4	16.0	13.7	29.8
S.E.	—	—	—	0.64	0.52	0.71	0.36	0.38	0.52
Unweighted n	—	—	—	174	146	153	173	159	160
Weighted n (in 1000s)	—	—	—	28	23	25	27	25	25
Other/general	12.0	8.9	20.7	13.2	11.0	24.3	15.3	12.9	27.5
S.E.	0.30	0.26	0.35	0.38	0.30	0.34	0.20	0.25	0.90
Unweighted n	940	796	858	2,342	1,989	2,060	984	838	869
Weighted n (in 1000s)	178	150	165	440	370	388	161	135	145

—Too few sample observations for a reliable estimate.

*Includes students who completed both a vocational concentration and a college preparatory curriculum.

NOTE: Row n's may not add to total n's because of missing data.

SOURCE: U.S. Department of Education, National Center for Education Statistics, National Education Longitudinal Study of 1988, Second Follow-up and High School Transcript Study.

Table A32—Standard errors for table 35: Average 8–10th, 10–12th, and 8–12th grade test score gains in reading for 1992 public high school graduates according to 8th-grade reading test score quartiles, by curriculum specialization in high school

	Lowest quartile			Middle two quartiles			Highest quartile		
Curriculum specialization	8–10th	10–12th	8–12th	8–10th	10–12th	8–12th	8–10th	10–12th	8–12th
Total	6.9	9.4	16.6	8.2	11.2	19.5	10.1	13.2	23.0
S.E.	0.25	0.37	0.56	0.16	0.18	0.18	0.14	0.20	0.32
Unweighted n	1,865	1,548	1,626	4,948	4,262	4,430	2,964	2,561	2,639
Weighted n (in 1000s)	339	281	306	869	730	762	516	445	468
College preparatory only	9.2	10.4	19.9	9.9	12.0	21.9	10.8	13.6	24.4
S.E.	0.40	0.61	0.67	0.27	0.22	0.27	0.19	0.33	0.22
Unweighted n	163	142	150	1,383	1,231	1,267	1,526	1,330	1,376
Weighted n (in 1000s)	24	22	23	232	200	208	270	234	245
Vocational concentrators total*	6.6	8.8	15.7	7.3	10.8	18.0	8.5	12.4	21.0
S.E.	0.25	0.30	0.48	0.24	0.27	0.28	0.42	0.33	0.58
Unweighted n	711	586	611	1,283	1,095	1,139	437	362	368
Weighted n (in 1000s)	120	97	105	222	183	191	76	63	64
Vocational concentration only	6.4	8.8	15.5	7.0	10.7	17.6	7.7	12.2	19.9
S.E.	0.24	0.28	0.49	0.26	0.30	0.31	0.55	0.43	0.76
Unweighted n	678	557	581	1,098	930	968	292	237	242
Weighted n (in 1000s)	115	93	101	191	156	162	54	44	45
Both vocational concentration and college preparatory	12.8	—	19.9	8.8	11.2	20.5	10.4	13.0	23.6
S.E.	1.66	—	1.81	0.52	0.70	0.63	0.32	0.43	0.49
Unweighted n	33	—	30	185	165	171	145	125	126
Weighted n (in 1000s)	5	—	4	31	28	29	22	19	20
Other/general	6.9	9.7	16.7	7.8	11.0	19.0	9.7	12.8	21.7
S.E.	0.40	0.59	0.90	0.23	0.32	0.29	0.24	0.24	0.77
Unweighted n	991	820	865	2,282	1,936	2,024	1,001	869	895
Weighted n (in 1000s)	195	162	177	415	346	363	170	148	158

—Too few sample observations for a reliable estimate.

*Includes students who completed both a vocational concentration and a college preparatory curriculum.

NOTE: Row n's may not add to total n's because of missing data.

SOURCE: U.S. Department of Education, National Center for Education Statistics, National Education Longitudinal Study of 1988, Second Follow-up and High School Transcript Study.

Table A33—Standard errors for table 36: Average 8–10th, 10–12th, and 8–12th grade test score gains in science for 1992 public high school graduates according to 8th-grade science test score quartiles, by curriculum specialization in high school

	Lowest quartile			Middle two quartiles			Highest quartile		
Curriculum specialization	8–10th	10–12th	8–12th	8–10th	10–12th	8–12th	8–10th	10–12th	8–12th
Total	1.3	8.3	9.5	0.2	9.2	9.3	-0.6	10.2	9.6
S.E.	0.19	0.19	0.19	0.09	0.10	0.13	0.14	0.17	0.12
Unweighted n	1,799	1,480	1,577	4,960	4,249	4,430	2,942	2,547	2,627
Weighted n (in 1000s)	324	263	285	863	729	776	517	445	459
College preparatory only	2.4	8.2	10.5	1.0	10.1	10.9	0.1	10.3	10.3
S.E.	0.36	0.46	0.68	0.13	0.19	0.26	0.10	0.15	0.17
Unweighted n	201	175	184	1,391	1,234	1,274	1,464	1,271	1,317
Weighted n (in 1000s)	36	32	33	238	210	219	246	211	220
Vocational concentrators total*	1.1	8.2	9.3	-0.4	8.8	8.5	-1.4	9.7	8.5
S.E.	0.18	0.18	0.35	0.14	0.16	0.17	0.27	0.22	0.23
Unweighted n	603	495	522	1,319	1,099	1,151	483	420	428
Weighted n (in 1000s)	103	84	93	224	182	192	86	73	74
Vocational concentration only	1.0	8.2	9.3	-0.6	8.8	8.2	-1.9	9.7	8.0
S.E.	0.18	0.18	0.36	0.15	0.17	0.18	0.32	0.26	0.26
Unweighted n	574	472	499	1,120	925	971	351	303	309
Weighted n (in 1000s)	99	80	89	190	152	161	66	55	56
Both vocational concentration and college preparatory	—	—	—	0.8	8.9	9.9	0.1	9.9	10.2
S.E.	—	—	—	0.30	0.33	0.39	0.30	0.36	0.37
Unweighted n	—	—	—	199	174	180	132	117	119
Weighted n (in 1000s)	—	—	—	34	29	30	20	18	18
Other/general	1.1	8.4	9.5	0.0	8.8	8.8	-1.0	10.3	9.1
S.E.	0.29	0.29	0.22	0.15	0.12	0.18	0.32	0.39	0.19
Unweighted n	995	810	871	2,250	1,916	2,005	995	856	882
Weighted n (in 1000s)	185	148	159	401	337	366	185	161	166

—Too few sample observations for a reliable estimate.

*Includes students who completed both a vocational concentration and a college preparatory curriculum.

NOTE: Row n's may not add to total n's because of missing data. Estimates appearing as 0.0 may be nonzero but less than 0.05.

SOURCE: U.S. Department of Education, National Center for Education Statistics, National Education Longitudinal Study of 1988, Second Follow-up and High School Transcript Study.

Table A34—Standard errors for table 37: Average number of credits earned by 1992 public high school graduates in various mathematics and precalculus courses and average number and percentage of credits earned in low-level mathematics courses[1] according to 8th-grade mathematics test score quartiles, by curriculum specialization in high school

Curriculum specialization	Average number of math credits	Average number of precalculus credits	Average number of low-level math credits	Percent of total math credits that are low-level[2]
Lowest quartile				
Total	2.88	0.23	1.49	54.0
S.E.	0.033	0.020	0.052	1.90
Unweighted n	1,787	1,787	1,787	1,784
Weighted n (in 1000s)	333	333	333	333
College preparatory only	3.80	1.10	0.46	11.0
S.E.	0.078	0.084	0.062	1.46
Unweighted n	131	131	131	131
Weighted n (in 1000s)	24	24	24	24
Vocational concentrators total[3]	2.73	0.13	1.67	62.9
S.E.	0.055	0.020	0.063	2.13
Unweighted n	623	623	623	622
Weighted n (in 1000s)	110	110	110	110
Vocational concentration only	2.71	0.10	1.71	64.3
S.E.	0.056	0.016	0.063	2.08
Unweighted n	607	607	607	606
Weighted n (in 1000s)	107	107	107	107
Both vocational concentration and college preparatory	—	—	—	—
S.E.	—	—	—	—
Unweighted n	—	—	—	—
Weighted n (in 1000s)	—	—	—	—
Other/general	2.85	0.19	1.51	54.2
S.E.	0.039	0.027	0.073	2.71
Unweighted n	1,033	1,033	1,033	1,031
Weighted n (in 1000s)	200	200	200	199
Middle two quartiles				
Total	3.17	0.74	0.65	22.8
S.E.	0.023	0.018	0.020	0.69
Unweighted n	5,259	5,259	5,259	5,253
Weighted n (in 1000s)	960	960	960	958
College preparatory only				
S.E.	3.75	1.45	0.15	3.7
Unweighted n	0.026	0.027	0.018	0.45
Weighted n (in 1000s)	1,346	1,346	1,346	1,346
	230	230	230	230

Table A34—Standard errors for table 37: Average number of credits earned by 1992 public high school graduates in various mathematics and precalculus courses and average number and percentage of credits earned in low-level mathematics courses[1] according to 8th-grade mathematics test score quartiles, by curriculum specialization in high school—Continued

Curriculum specialization	Average number of math credits	Average number of precalculus credits	Average number of low-level math credits	Percent of total math credits that are low-level[2]
Vocational concentrators total[3]				
S.E.	2.84	0.47	0.87	33.7
Unweighted n	0.037	0.024	0.036	1.40
Weighted n (in 1000s)	1,445	1,445	1,445	1,443
	255	255	255	254
Vocational concentration only				
S.E.	2.73	0.34	0.97	38.0
Unweighted n	0.040	0.023	0.040	1.56
Weighted n (in 1000s)	1,257	1,257	1,257	1,255
	223	223	223	223
Both vocational concentration and college preparatory	3.62	1.39	0.15	3.6
S.E.	0.056	0.050	0.031	0.75
Unweighted n	188	188	188	188
Weighted n (in 1000s)	32	32	32	32
Other/general	3.07	0.53	0.77	26.1
S.E.	0.034	0.021	0.029	0.97
Unweighted n	2,468	2,468	2,468	2,464
Weighted n (in 1000s)	475	475	475	474
Highest quartile				
Total	3.62	4.02	0.12	4.0
S.E.	0.025	0.433	0.012	0.43
Unweighted n	3,268	3,266	3,268	3,266
Weighted n (in 1000s)	568	568	568	568
College preparatory only				
S.E.	3.90	1.69	0.03	0.7
Unweighted n	0.020	0.037	0.006	0.13
Weighted n (in 1000s)	1,743	1,743	1,743	1,743
	310	310	310	310
Vocational concentrators total[3]				
S.E.	3.29	1.21	0.22	8.1
Unweighted n	0.071	0.049	0.032	1.41
Weighted n (in 1000s)	492	492	492	492
	85	85	85	85
Vocational concentration only				
S.E.	3.01	0.97	0.31	11.8
Unweighted n	0.086	0.057	0.048	2.08
Weighted n (in 1000s)	314	314	314	314
	57	57	57	57

Table A34—Standard errors for table 37: Average number of credits earned by 1992 public high school graduates in various mathematics and precalculus courses and average number and percentage of credits earned in low-level mathematics courses[1] according to 8th-grade mathematics test score quartiles, by curriculum specialization in high school—Continued

Curriculum specialization	Average number of math credits	Average number of precalculus credits	Average number of low-level math credits	Percent of total math credits that are low-level[2]
Both vocational concentration and college preparatory	3.84	1.69	0.03	0.7
S.E.	0.054	0.054	0.014	0.32
Unweighted n	178	178	178	178
Weighted n (in 1000s)	28	28	28	28
Other/general	3.28	1.14	0.24	7.9
S.E.	0.038	0.049	0.029	1.02
Unweighted n	1,033	1,033	1,033	1,031
Weighted n (in 1000s)	174	174	174	173

—Too few sample observations for a reliable estimate.

[1] These include general and consumer mathematics and pre-algebra courses.

[2] These percentages are the average rates calculated for each student in the population.

[3] Includes students who completed both a vocational concentration and a college preparatory curriculum.

NOTE: Row n's may not add to total n's because of missing data.

SOURCE: U.S. Department of Education, National Center for Education Statistics, National Education Longitudinal Study of 1988, Second Follow-up and High School Transcript Study.

Table A35—Standard errors for table 38: Percentage of public schools reporting various efforts to integrate academic and vocational education, by selected school characteristics: 1997

Selected school characteristics	Teachers attend conferences on integrating academic and vocational education	School offers integrated academic and vocational curricula
Total	90.4	45.0
S.E.	0.99	1.57
Unweighted n	3,013	3,129
Weighted n	13,857	15,539
Student enrollment		
1–500	85.7	31.3
S.E.	1.95	2.33
Unweighted n	479	525
Weighted n	5,036	6,178
501–1,000	92.4	46.4
S.E.	1.57	2.83
Unweighted n	789	828
Weighted n	4,466	4,817
1,001 or more	93.9	62.0
S.E.	1.44	2.84
Unweighted n	1,745	1,776
Weighted n	4,356	4,543
Urbanicity		
Urban	92.2	57.1
S.E.	2.27	4.09
Unweighted n	855	844
Weighted n	2,181	2,284
Suburban	91.3	51.0
S.E.	1.39	2.39
Unweighted n	1,713	1,806
Weighted n	6,344	6,780
Rural	88.4	34.1
S.E.	1.75	2.34
Unweighted n	418	453
Weighted n	5,205	6,349
Career academy		
Yes	97.3	77.8
S.E.	4.75	12.39
Unweighted n	81	80
Weighted n	193	190
No	90.3	45.2
S.E.	1.05	1.65
Unweighted n	2,620	2,826
Weighted n	12,349	14,173

NOTE: The sample is made up of public schools with a 12th grade. Schools that were identified by school district officials as primarily vocational in nature were not included in the sampling frame. Row n's may not add to total n's because of missing data.

SOURCE: U.S. Department of Labor, Bureau of Labor Statistics, National Longitudinal Survey of Youth, 1996–97.

Table A36—Standard errors for table 39: Percentage of public schools offering tech-prep education, by selected characteristics: 1997

Selected characteristics	Tech-prep education
Total	50.1
S.E.	1.66
Unweighted n	3,000
Weighted n (in 1000s)	14,141
Student enrollment	
1–500	40.0
S.E.	2.57
Unweighted n	490
Weighted n (in 1000s)	5,628
501–1,000	54.6
S.E.	3.03
Unweighted n	778
Weighted n (in 1000s)	4,195
1,001 or more	59.1
S.E.	2.95
Unweighted n	1,732
Weighted n (in 1000s)	4,318
Urbanicity	
Urban	50.5
S.E.	4.15
Unweighted n	867
Weighted n (in 1000s)	2,264
Suburban	61.0
S.E.	2.42
Unweighted n	1,682
Weighted n (in 1000s)	6,325
Rural	37.6
S.E.	2.59
Unweighted n	422
Weighted n (in 1000s)	5,422
Career academy	
Yes	77.3
S.E.	12.59
Unweighted n	77
Weighted n (in 1000s)	187
No	51.7
S.E.	1.75
Unweighted n	2,623
Weighted n (in 1000s)	12,669

Table A36—Standard errors for table 39: Percentage of public schools offering tech-prep education, by selected characteristics: 1997—Continued

Selected characteristics	Tech-prep education
Region	
Northeast	37.8
S.E.	4.30
Unweighted n	767
Weighted n (in 1000s)	1,984
Midwest	61.9
S.E.	3.06
Unweighted n	654
Weighted n (in 1000s)	3,912
West	60.3
S.E.	3.68
Unweighted n	666
Weighted n (in 1000s)	2,757
South	43.2
S.E.	2.84
Unweighted n	780
Weighted n (in 1000s)	4,728

NOTE: The sample is made up of public schools with a 12th grade. Schools that were identified by school district officials as primarily vocational in nature were not included in the sampling frame. Row n's may not add to total n's because of missing data.

SOURCE: U.S. Department of Labor, Bureau of Labor Statistics, National Longitudinal Survey of Youth, 1996–97.

Table A37—Standard errors for table 40: Percentage of public schools offering various school-based activities, by selected characteristics: 1997

	Block scheduling	Career major	School-based enterprise
Total	38.9	19.6	19.1
S.E.	1.57	1.30	1.34
Unweighted n	3,048	2,928	2,853
Weighted n (in 1000s)	14,870	14,412	13,387
Student enrollment			
1–500	32.7	12.5	14.3
S.E.	2.38	1.71	1.86
Unweighted n	502	476	456
Weighted n (in 1000s)	6,026	5,829	5,506
501–1,000	39.9	19.2	15.5
S.E.	2.89	2.36	2.28
Unweighted n	796	763	742
Weighted n (in 1000s)	4,471	4,350	3,910
1,001 or more	46.5	29.8	29.2
S.E.	2.97	2.77	2.85
Unweighted n	1750	1689	1655
Weighted n (in 1000s)	4,373	4,234	3,971
Urbanicity			
Urban	48.0	25.8	24.7
S.E.	4.10	3.67	3.70
Unweighted n	883	851	839
Weighted n (in 1000s)	2,315	2,224	2,123
Suburban	44.1	25.1	25.4
S.E.	2.45	2.17	2.25
Unweighted n	1711	1684	1586
Weighted n (in 1000s)	6,386	6,233	5,820
Rural	29.8	12.7	9.2
S.E.	2.32	1.69	1.57
Unweighted n	424	412	398
Weighted n (in 1000s)	6,037	6,014	5,312
Career academy			
Yes	64.2	71.5	50.8
S.E.	14.28	13.44	15.08
Unweighted n	79	79	77
Weighted n (in 1000s)	190	190	186
No	39.7	19.4	19.1
S.E.	1.67	1.37	1.41
Unweighted n	2664	2557	2486
Weighted n (in 1000s)	13,385	12,962	11,991

Table A37—Standard errors for table 40: Percentage of public schools offering various school-based activities, by selected characteristics: 1997—Continued

	Block scheduling	Career major	School-based enterprise
Region			
Northeast	35.2	20.8	23.1
S.E.	4.24	3.61	3.86
Unweighted n	772	759	725
Weighted n (in 1000s)	1,985	1,980	1,865
Midwest	35.6	14.3	22.0
S.E.	2.98	2.20	2.69
Unweighted n	664	642	625
Weighted n (in 1000s)	4,023	3,921	3,696
West	41.0	17.5	23.4
S.E.	3.49	2.75	3.23
Unweighted n	690	665	638
Weighted n (in 1000s)	3,101	2,985	2,682
South	39.2	26.3	13.5
S.E.	2.72	2.50	2.04
Unweighted n	792	734	733
Weighted n (in 1000s)	5,026	4,834	4,383

NOTE: The sample is made up of public schools with a 12th grade. Schools that were identified by school district officials as primarily vocational in nature were not included in the sampling frame. Row n's may not add to total n's because of missing data.

SOURCE: U.S. Department of Labor, Bureau of Labor Statistics, National Longitudinal Survey of Youth, 1996–97.

Table A38—Standard errors for table 41: Percentage of public schools offering skill standards, skill certificates, and occupational certificates, by selected school characteristics: 1997

Selected school characteristics	Skill standards	Skill certificates	Occupational certificates
Total	27.5	19.9	19.7
S.E.	1.41	1.26	1.26
Unweighted n	3,218	3,227	3,202
Weighted n (in 1000s)	15,587	15,602	15,480
Region			
Northeast	29.3	20.8	19.2
S.E.	3.95	3.52	3.41
Unweighted n	810	808	811
Weighted n (in 1000s)	2,076	2,076	2,080
Midwest	27.6	20.5	22.2
S.E.	2.68	2.42	2.49
Unweighted n	695	698	694
Weighted n (in 1000s)	4,333	4,313	4,319
West	30.4	25.2	16.5
S.E.	3.20	3.01	2.59
Unweighted n	743	744	734
Weighted n (in 1000s)	3,227	3,234	3,198
South	27.3	17.1	21.7
S.E.	2.43	2.04	2.27
Unweighted n	828	834	821
Weighted n (in 1000s)	5,247	5,273	5,100
Public school type			
Comprehensive public	27.9	20.4	19.1
S.E.	1.60	1.43	1.41
Unweighted n	2,431	2,438	2,419
Weighted n (in 1000s)	12,232	12,241	12,139
Public choice	15.0	12.8	19.4
S.E.	3.09	2.89	3.43
Unweighted n	314	314	311
Weighted n (in 1000s)	2,083	2,085	2,072
Public magnet	30.2	22.3	15.2
S.E.	11.43	10.30	8.95
Unweighted n	120	122	121
Weighted n (in 1000s)	265	269	265
Other public	24.9	13.1	21.2
S.E.	8.85	6.91	8.33
Unweighted n	136	136	138
Weighted n (in 1000s)	385	386	388

Table A38—Standard errors for table 41: Percentage of public schools offering skill standards, skill certificates, and occupational certificates, by selected school characteristics: 1997—Continued

Selected school characteristics	Skill standards	Skill certificates	Occupational certificates
Percent minority students			
0–25	24.3	16.6	17.9
S.E.	1.62	1.40	1.44
Unweighted n	1,696	1,702	1,699
Weighted n (in 1000s)	10,914	10,921	11,009
26–50	34.4	25.6	25.1
S.E.	3.96	3.63	3.77
Unweighted n	584	587	576
Weighted n (in 1000s)	2,245	2,257	2,064
51–75	26.2	21.4	19.8
S.E.	4.81	4.50	4.38
Unweighted n	399	396	393
Weighted n (in 1000s)	1,310	1,302	1,299
76–100	51.1	42.3	29.6
S.E.	6.38	6.29	5.85
Unweighted n	497	500	493
Weighted n (in 1000s)	967	972	960
Grade span			
K–12	30.1	8.9	11.5
S.E.	5.52	3.42	3.84
Unweighted n	114	114	113
Weighted n (in 1000s)	1,087	1,087	1,085
7–12	14.1	11.0	9.0
S.E.	3.24	2.90	2.59
Unweighted n	266	269	272
Weighted n (in 1000s)	1,808	1,821	1,915
9–12	29.2	22.0	21.2
S.E.	1.64	1.49	1.49
Unweighted n	2,613	2,618	2,594
Weighted n (in 1000s)	11,929	11,930	11,727
10–12	28.7	22.7	35.0
S.E.	6.52	6.03	6.91
Unweighted n	225	226	223
Weighted n (in 1000s)	761	763	753
Percent taking SAT or ACT			
0–25	30.3	22.2	20.9
S.E.	4.15	3.82	3.67
Unweighted n	363	360	365
Weighted n (in 1000s)	1,915	1,848	1,918

Table A38—Standard errors for table 41: Percentage of public schools offering skill standards, skill certificates, and occupational certificates, by selected school characteristics: 1997—Continued

Selected school characteristics	Skill standards	Skill certificates	Occupational certificates
26–50	28.2	18.3	18.4
S.E.	2.70	2.31	2.33
Unweighted n	793	789	792
Weighted n (in 1000s)	4,321	4,343	4,315
51–75	27.9	26.7	21.3
S.E.	2.51	2.48	2.29
Unweighted n	973	965	974
Weighted n (in 1000s)	4,976	4,935	4,973
76–100	24.9	9.5	17.8
S.E.	3.08	2.09	2.72
Unweighted n	773	777	774
Weighted n (in 1000s)	3,074	3,076	3,077
Student enrollment			
1–500	15.8	9.4	7.2
S.E.	1.84	1.47	1.29
Unweighted n	533	535	531
Weighted n (in 1000s)	6,103	6,094	6,177
501–1,000	26.0	17.8	20.3
S.E.	2.48	2.17	2.32
Unweighted n	839	837	830
Weighted n (in 1000s)	4,844	4,835	4,666
1,001 or more	44.6	35.7	35.8
S.E.	2.88	2.76	2.78
Unweighted n	1,846	1,855	1,841
Weighted n (in 1000s)	4,640	4,673	4,637
Urbanicity			
Urban	41.4	31.6	33.6
S.E.	3.96	3.73	3.81
Unweighted n	923	925	918
Weighted n (in 1000s)	2,418	2,420	2,400
Suburban	34.1	26.8	23.4
S.E.	2.27	2.12	2.03
Unweighted n	1,815	1,821	1,802
Weighted n (in 1000s)	6,778	6,808	6,745
Rural	15.3	7.9	10.5
S.E.	1.79	1.35	1.53
Unweighted n	449	450	451
Weighted n (in 1000s)	6,258	6,241	6,202

Table A38—Standard errors for table 41: Percentage of public schools offering skill standards, skill certificates, and occupational certificates, by selected school characteristics: 1997—Continued

Selected school characteristics	Skill standards	Skill certificates	Occupational certificates
Career academy			
Yes	60.8	54.3	53.9
S.E.	14.42	14.72	14.72
Unweighted n	81	80	81
Weighted n (in 1000s)	193	193	193
No	26.4	18.7	18.6
S.E.	1.46	1.30	1.29
Unweighted n	2,835	2,822	2,837
Weighted n (in 1000s)	14,088	14,004	14,093

NOTE: The sample is made up of public schools with a 12th grade. Schools that were identified by school district officials as primarily vocational in nature were not included in the sampling frame. Row n's may not add to total n's because of missing data.

SOURCE: U.S. Department of Labor, Bureau of Labor Statistics, National Longitudinal Survey of Youth, 1996–97.

Table A39—Standard errors for table 42: Percentage distribution of 1992 public high school graduates according to their work status during their senior year in high school, by curriculum specialization in high school

Curriculum specialization	Never worked	Any work	Hours worked: 20 or fewer hours	Hours worked: More than 20 hours
Total	29.2	70.8	67.7	32.3
S.E.	0.93	0.93	1.06	1.06
Unweighted n	10,589	10,589	7,301	7,301
Weighted n (in 1000s)	1,868	1,868	1,322	1,322
College preparatory only	31.8	68.2	79.9	20.1
S.E.	1.46	1.46	1.35	1.35
Unweighted n	3,309	3,309	2,186	2,186
Weighted n (in 1000s)	563	563	385	385
Vocational concentrators total*	25.3	74.7	55.8	44.2
S.E.	1.25	1.25	1.73	1.73
Unweighted n	2,591	2,591	1,923	1,923
Weighted n (in 1000s)	445	445	333	333
Vocational concentration only	24.5	75.5	53.8	46.3
S.E.	1.29	1.29	1.92	1.92
Unweighted n	2,201	2,201	1,643	1,643
Weighted n (in 1000s)	381	381	288	288
Both vocational concentration and college preparatory	29.5	70.5	68.6	31.4
S.E.	3.35	3.35	3.41	3.41
Unweighted n	391	391	280	280
Weighted n (in 1000s)	64	64	45	45
Other/general	29.6	70.4	66.4	33.6
S.E.	1.47	1.47	1.71	1.71
Unweighted n	4,689	4,689	3,192	3,192
Weighted n (in 1000s)	860	860	605	605

*Includes students who completed both a vocational concentration and a college preparatory curriculum.

NOTE: Percentages may not add to 100 due to rounding. Row n's may not add to total n's because of missing data.

SOURCE: U.S. Department of Education, National Center for Education Statistics, National Education Longitudinal Study of 1988, Second Follow-up and High School Transcript Study.

Table A40—Standard errors for table 43: Percentage of public high school graduates completing cooperative education or work experience coursework in a specific occupational area, by curriculum specialization in high school: 1982, 1990, and 1994

Curriculum specialization	1982	1990	1994
Total	8.0	7.4	9.4
S.E.	0.51	0.87	0.67
Unweighted n	9,596	16,507	23,706
Weighted n (in 1000s)	2,606	2,505	2,213
Vocational concentrators total*	14.9	17.6	23.1
S.E.	1.00	2.00	1.51
Unweighted n	3,155	4,457	5,889
Weighted n (in 1000s)	877	696	562
Vocational concentration only	15.0	17.9	23.8
S.E.	1.06	2.05	1.61
Unweighted n	3,089	3,951	4,780
Weighted n (in 1000s)	862	625	462
Both vocational concentration and college preparatory	8.0	15.4	20.4
S.E.	3.79	2.82	1.97
Unweighted n	66	506	1,109
Weighted n (in 1000s)	15	70	100
College preparatory	0.1	1.6	3.0
S.E.	0.06	0.39	0.74
Unweighted n	774	4,562	7,741
Weighted n (in 1000s)	212	649	712
Other/general	5.1	4.4	6.0
S.E.	0.53	0.77	0.74
Unweighted n	5,667	7,488	10,076
Weighted n (in 1000s)	1,517	1,161	938

*Includes students who completed both a vocational concentration and a college preparatory curriculum.

NOTE: Row n's may not add to total n's because of missing data.

SOURCE: U.S. Department of Education, National Center for Education Statistics, High School and Beyond Sophomore Cohort 1982 High School Transcript Study and 1990 and 1994 National Assessment of Educational Progress High School Transcript Studies.

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Table A41—Standard errors for table 44: Average percentage of specific labor market preparation (SLMP) credits earned through cooperative education or work experience coursework in a specific occupational area, by curriculum specialization in high school: 1982, 1990, and 1994

Curriculum specialization	1982	1990	1994
Total	3.5	3.2	4.5
S.E.	0.20	0.40	0.32
Unweighted n	8,501	16,507	23,706
Weighted n (in 1000s)	2,311	2,505	2,213
Vocational concentrators total*	5.8	7.8	11.4
S.E.	0.49	1.03	0.84
Unweighted n	3,155	4,457	5,889
Weighted n (in 1000s)	877	696	562
Vocational concentration only	5.8	7.8	11.5
S.E.	0.50	1.04	0.88
Unweighted n	3,089	3,951	4,780
Weighted n (in 1000s)	862	625	462
Both vocational concentration and college preparatory	4.0	8.5	10.9
S.E.	1.91	1.63	1.22
Unweighted n	66	506	1,109
Weighted n (in 1000s)	15	70	100
College preparatory	0.1	0.8	1.4
S.E.	0.06	0.20	0.31
Unweighted n	535	4,562	7,741
Weighted n (in 1000s)	143	649	712
Other/general	2.4	1.8	2.7
S.E.	0.27	0.31	0.37
Unweighted n	4,811	7,488	10,076
Weighted n (in 1000s)	1,291	1,161	938

*Includes students who completed both a vocational concentration and a college preparatory curriculum.

NOTE: Row n's may not add to total n's because of missing data.

SOURCE: U.S. Department of Education, National Center for Education Statistics, High School and Beyond Sophomore Cohort 1982 High School Transcript Study and 1990 and 1994 National Assessment of Educational Progress High School Transcript Studies.

Table A42—Standard errors for table 45: Average number of Carnegie units accumulated by public high school graduates in cooperative education and work experience coursework in a specific occupational area: 1982, 1990, and 1994

Curriculum specialization	Total	Agriculture and renewable resources	Business	Marketing and distribution	Health care	Public and protective services	Trade and industry	Technology and communications	Personal and other services	Food service and hospitality	Child care and education	Occupational home economics[1]
						1982						
Total	0.15	0.01	0.07	0.04	0.01	0.00	0.01	0.00	0.00	0.01	0.00	0.01
S.E.	0.011	0.002	0.007	0.006	0.002	0.000	0.002	0.000	0.000	0.002	0.000	0.002
Unweighted n	9,596	9,596	9,596	9,596	9,596	9,596	9,596	9,596	9,596	9,596	9,596	9,596
Weighted n (in 1000s)	2,606	2,606	2,606	2,606	2,606	2,606	2,606	2,606	2,606	2,606	2,606	2,606
Vocational concentrators total[2]	0.34	0.02	0.17	0.09	0.02	0.00	0.03	0.00	0.00	0.01	0.00	0.01
S.E.	0.029	0.004	0.018	0.016	0.007	0.000	0.007	0.000	0.000	0.003	0.000	0.003
Unweighted n	3,155	3,155	3,155	3,155	3,155	3,155	3,155	3,155	3,155	3,155	3,155	3,155
Weighted n (in 1000s)	877	877	877	877	877	877	877	877	877	877	877	877
Vocational concentration only	0.34	0.02	0.17	0.09	0.02	0.00	0.03	0.00	0.00	0.01	0.00	0.01
S.E.	0.029	0.005	0.018	0.016	0.007	0.000	0.007	0.000	0.000	0.003	0.000	0.003
Unweighted n	3,089	3,089	3,089	3,089	3,089	3,089	3,089	3,089	3,089	3,089	3,089	3,089
Weighted n (in 1000s)	862	862	862	862	862	862	862	862	862	862	862	862
Both vocational concentration and college preparatory	0.16	0.00	0.08	0.08	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
S.E.	0.077	0.000	0.056	0.053	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Unweighted n	66	66	66	66	66	66	66	66	66	66	66	66
Weighted n (in 1000s)	15	15	15	15	15	15	15	15	15	15	15	15
College preparatory	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
S.E.	0.001	0.000	0.001	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Unweighted n	774	774	774	774	774	774	774	774	774	774	774	774
Weighted n (in 1000s)	212	212	212	212	212	212	212	212	212	212	212	212

Table A42—Standard errors for table 45: Average number of Carnegie units accumulated by public high school graduates in cooperative education and work experience coursework in a specific occupational area: 1982, 1990, and 1994—Continued

Curriculum specialization	Total	Agri-culture and renewable resources	Business	Marketing and distri-bution	Health care	Public and protective services	Trade and industry	Tech-nology and communi-cations	Personal and other services	Food service and hospitality	Child care and education	Occu-pational home economics[1]
Other/general	0.06	0.00	0.02	0.02	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.01
S.E.	0.006	0.000	0.004	0.003	0.001	0.000	0.001	0.000	0.000	0.002	0.000	0.002
Unweighted n	5,667	5,667	5,667	5,667	5,667	5,667	5,667	5,667	5,667	5,667	5,667	5,667
Weighted n (in 1000s)	1,517	1,517	1,517	1,517	1,517	1,517	1,517	1,517	1,517	1,517	1,517	1,517
						1990						
Total	0.15	0.01	0.05	0.04	0.01	0.00	0.03	0.00	0.01	0.00	0.00	0.02
S.E.	0.019	0.005	0.010	0.006	0.000	0.000	0.008	0.000	0.004	0.000	0.000	0.004
Unweighted n	16,507	16,507	16,507	16,507	16,507	16,507	16,507	16,507	16,507	16,507	16,507	16,507
Weighted n (in 1000s)	2,505	2,505	2,505	2,505	2,505	2,505	2,505	2,505	2,505	2,505	2,505	2,505
Vocational concentrators total[2]	0.45	0.04	0.14	0.10	0.02	0.00	0.11	0.00	0.04	0.00	0.01	0.05
S.E.	0.057	0.016	0.031	0.017	0.007	0.000	0.027	0.000	0.015	0.000	0.003	0.015
Unweighted n	4,457	4,457	4,457	4,457	4,457	4,457	4,457	4,457	4,457	4,457	4,457	4,457
Weighted n (in 1000s)	696	696	696	696	696	696	696	696	696	696	696	696
Vocational concentration only	0.46	0.05	0.13	0.10	0.02	0.00	0.11	0.00	0.04	0.00	0.01	0.05
S.E.	0.059	0.018	0.030	0.018	0.005	0.000	0.029	0.000	0.015	0.000	0.004	0.016
Unweighted n	3,951	3,951	3,951	3,951	3,951	3,951	3,951	3,951	3,951	3,951	3,951	3,951
Weighted n (in 1000s)	625	625	625	625	625	625	625	625	625	625	625	625
Both vocational concentration and college preparatory	0.40	0.00	0.22	0.08	0.03	0.00	0.03	0.00	0.03	0.00	0.00	0.03
S.E.	0.079	0.000	0.065	0.026	0.022	0.000	0.015	0.000	0.022	0.000	0.000	0.022
Unweighted n	506	506	506	506	506	506	506	506	506	506	506	506
Weighted n (in 1000s)	70	70	70	70	70	70	70	70	70	70	70	70
College preparatory	0.02	0.00	0.01	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
S.E.	0.004	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Unweighted n	4,562	4,562	4,562	4,562	4,562	4,562	4,562	4,562	4,562	4,562	4,562	4,562
Weighted n (in 1000s)	649	649	649	649	649	649	649	649	649	649	649	649

Table A42—Standard errors for table 45: Average number of Carnegie units accumulated by public high school graduates in cooperative education and work experience coursework in a specific occupational area: 1982, 1990, and 1994—Continued

Curriculum specialization	Total	Agri-culture and renewable resources	Business	Marketing and distri-bution	Health care	Public and protective services	Trade and industry	Tech-nology and communi-cations	Personal and other services	Food service and hospitality	Child care and education	Occu-pational home economics[1]
Other/general	0.05	0.00	0.02	0.02	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00
S.E.	0.009	0.000	0.005	0.005	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Unweighted n	7,488	7,488	7,488	7,488	7,488	7,488	7,488	7,488	7,488	7,488	7,488	7,488
Weighted n (in 1000s)	1,161	1,161	1,161	1,161	1,161	1,161	1,161	1,161	1,161	1,161	1,161	1,161
						1994						
Total	0.21	0.01	0.06	0.06	0.02	0.00	0.03	0.00	0.02	0.01	0.01	0.03
S.E.	0.015	0.006	0.007	0.007	0.000	0.000	0.006	0.000	0.003	0.000	0.000	0.005
Unweighted n	23,706	23,706	23,706	23,706	23,706	23,706	23,706	23,706	23,706	23,706	23,706	23,706
Weighted n (in 1000s)	2,213	2,213	2,213	2,213	2,213	2,213	2,213	2,213	2,213	2,213	2,213	2,213
Vocational concentrators total[2]	0.64	0.05	0.19	0.17	0.05	0.00	0.11	0.00	0.05	0.01	0.02	0.08
S.E.	0.049	0.022	0.024	0.024	0.022	0.000	0.022	0.000	0.011	0.007	0.007	0.016
Unweighted n	5,889	5,889	5,889	5,889	5,889	5,889	5,889	5,889	5,889	5,889	5,889	5,889
Weighted n (in 1000s)	562	562	562	562	562	562	562	562	562	562	562	562
Vocational concentration only	0.67	0.06	0.19	0.19	0.03	0.00	0.12	0.00	0.05	0.02	0.02	0.08
S.E.	0.055	0.027	0.025	0.025	0.006	0.000	0.026	0.000	0.013	0.009	0.007	0.019
Unweighted n	4,780	4,780	4,780	4,780	4,780	4,780	4,780	4,780	4,780	4,780	4,780	4,780
Weighted n (in 1000s)	462	462	462	462	462	462	462	462	462	462	462	462
Both vocational concentration and college preparatory	0.51	0.02	0.22	0.11	0.07	0.00	0.04	0.00	0.04	0.00	0.01	0.05
S.E.	0.053	0.008	0.043	0.030	0.025	0.000	0.012	0.000	0.021	0.000	0.006	0.023
Unweighted n	1,109	1,109	1,109	1,109	1,109	1,109	1,109	1,109	1,109	1,109	1,109	1,109
Weighted n (in 1000s)	100	100	100	100	100	100	100	100	100	100	100	100
College preparatory	0.03	0.00	0.01	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01
S.E.	0.006	0.000	0.003	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.003	0.003
Unweighted n	7,741	7,741	7,741	7,741	7,741	7,741	7,741	7,741	7,741	7,741	7,741	7,741
Weighted n (in 1000s)	712	712	712	712	712	712	712	712	712	712	712	712

Table A42—Standard errors for table 45: Average number of Carnegie units accumulated by public high school graduates in cooperative education and work experience coursework in a specific occupational area: 1982, 1990, and 1994—Continued

Curriculum specialization	Total	Agriculture and renewable resources	Business	Marketing and distribution	Health care	Public and protective services	Trade and industry	Technology and communications	Personal and other services	Food service and hospitality	Child care and education	Occupational home economics[1]
Other/general	0.08	0.00	0.02	0.03	0.00	0.00	0.01	0.00	0.01	0.00	0.00	0.01
S.E.	0.010	0.000	0.004	0.005	0.000	0.000	0.000	0.000	0.003	0.000	0.000	0.004
Unweighted n	10,076	10,076	10,076	10,076	10,076	10,076	10,076	10,076	10,076	10,076	10,076	10,076
Weighted n (in 1000s)	938	938	938	938	938	938	938	938	938	938	938	938

[1] Occupational home economics combines personal and other services, food service and hospitality, and child care and education.

[2] Includes students who completed both a vocational concentration and a college preparatory curriculum.

NOTE: Averages may not add to totals due to rounding. Row n's may not add to total n's because of missing data. Estimates appearing as 0.00 or 0.000 may be nonzero but less than 0.005 or 0.0005.

SOURCE: U.S. Department of Education, National Center for Education Statistics, High School and Beyond Sophomore Cohort 1982 High School Transcript Study and 1990 and 1994 National Assessment of Educational Progress High School Transcript Studies.

Table A43—Standard errors for table 46: Percentage of graduates completing career preparation and general work experience courses not in a specific occupational area, by curriculum specialization in high school: 1982, 1990, and 1994

Curriculum specialization	1982	1990	1994
Total	17.1	17.6	13.3
S.E.	0.80	1.37	1.65
Unweighted n	9,596	16,507	23,706
Weighted n (in 1000s)	2,606	2,505	2,213
Vocational concentrators total*	15.5	17.3	14.3
S.E.	1.09	1.94	2.13
Unweighted n	3,155	4,457	5,889
Weighted n (in 1000s)	877	696	562
Vocational concentration only	15.6	17.8	15.3
S.E.	1.10	1.80	2.25
Unweighted n	3,089	3,951	4,780
Weighted n (in 1000s)	862	625	462
Both vocational concentration and college preparatory	6.5	12.8	9.7
S.E.	4.80	4.41	2.24
Unweighted n	66	506	1,109
Weighted n (in 1000s)	15	70	100
College preparatory	5.2	9.8	7.7
S.E.	0.99	1.53	1.39
Unweighted n	774	4,562	7,741
Weighted n (in 1000s)	212	649	712
Other/general	19.6	22.0	16.9
S.E.	1.00	1.75	1.94
Unweighted n	5,667	7,488	10,076
Weighted n (in 1000s)	1,517	1,161	938

*Includes students who completed both a vocational concentration and a college preparatory curriculum.

NOTE: Row n's may not add to total n's because of missing data.

SOURCE: U.S. Department of Education, National Center for Education Statistics, High School and Beyond Sophomore Cohort 1982 High School Transcript Study and 1990 and 1994 National Assessment of Educational Progress High School Transcript Studies.

Table A44—Standard errors for table 47: Percentage of public high school graduates completing at least .5 credits of computer education coursework: 1982, 1990, and 1994

	1982	1990	1994
Total	13.2	78.4	79.9
S.E.	0.58	0.98	1.08
Unweighted n	9,598	16,507	23,706
Weighted n (in 1000s)	2,607	2,505	2,213
Gender			
Male	14.0	70.5	75.1
S.E.	0.76	1.35	1.43
Unweighted n	4,654	7,838	11,472
Weighted n (in 1000s)	1,257	1,194	1,083
Female	12.5	85.5	84.5
S.E.	0.70	0.85	0.91
Unweighted n	4,944	8,660	12,193
Weighted n (in 1000s)	1,350	1,309	1,126
Race–ethnicity			
American Indian/Alaskan Native	6.1	74.7	75.1
S.E.	2.12	3.06	5.01
Unweighted n	162	84	188
Weighted n (in 1000s)	30	12	17
Asian/Pacific Islander	18.1	74.8	78.5
S.E.	2.68	3.33	3.95
Unweighted n	301	682	1,215
Weighted n (in 1000s)	38	86	74
Black, non-Hispanic	12.8	78.3	77.9
S.E.	1.40	1.34	1.40
Unweighted n	1,337	2,324	3,953
Weighted n (in 1000s)	293	347	263
Hispanic	8.0	79.2	80.5
S.E.	0.88	1.98	1.36
Unweighted n	2,062	1,448	2,747
Weighted n (in 1000s)	307	194	168
White, non-Hispanic	14.2	78.7	80.7
S.E.	0.72	1.11	1.25
Unweighted n	5,657	11,403	14,526
Weighted n (in 1000s)	1,913	1,778	1,564

SOURCE: U.S. Department of Education, National Center for Education Statistics, High School and Beyond Sophomore Cohort 1982 High School Transcript Study and 1990 and 1994 National Assessment of Educational Progress High School Transcript Studies.

Table A45—Standard errors for table 48: Percentage of public high school graduates completing introductory technology coursework, by type of course: 1982, 1990, and 1994

	Introductory technology		
Year	Total	Industrial arts	Technology education
1982	14.1	14.0	0.2
S.E.	0.73	0.73	0.09
Unweighted n	9,596	9,596	9,596
Weighted n (in 1000s)	2,606	2,606	2,606
Gender			
Male	24.7	24.5	0.4
S.E.	1.23	1.23	0.14
Unweighted n	4,654	4,654	4,654
Weighted n (in 1000s)	1,257	1,257	1,257
Female	4.3	4.2	0.1
S.E.	0.53	0.53	0.00
Unweighted n	4,942	4,942	4,942
Weighted n (in 1000s)	1,349	1,349	1,349
Race–ethnicity			
American Indian/Alaskan Native	25.2	24.6	1.5
S.E.	9.60	9.87	1.06
Unweighted n	162	162	162
Weighted n (in 1000s)	30	30	30
Asian/Pacific Islander	11.2	11.2	0.0
S.E.	3.14	3.14	0.00
Unweighted n	301	301	301
Weighted n (in 1000s)	38	38	38
Black, non-Hispanic	11.4	11.1	0.3
S.E.	1.37	1.40	0.14
Unweighted n	1,337	1,337	1,337
Weighted n (in 1000s)	293	293	293
Hispanic	20.0	19.9	0.2
S.E.	1.73	1.72	0.08
Unweighted n	2,061	2,061	2,061
Weighted n (in 1000s)	307	307	307
White, non-Hispanic	13.6	13.5	0.2
S.E.	0.78	0.78	0.10
Unweighted n	5,656	5,656	5,656
Weighted n (in 1000s)	1,912	1,912	1,912
1990	9.6	9.0	0.8
S.E.	0.74	0.77	0.22
Unweighted n	16,507	16,507	16,507
Weighted n (in 1000s)	2,505	2,505	2,505

Table A45—Standard errors for table 48: Percentage of public high school graduates completing introductory technology coursework, by type of course: 1982, 1990, and 1994—Continued

	Introductory technology		
Year	Total	Industrial arts	Technology education
Gender			
Male	16.8	15.7	1.5
S.E.	1.07	1.12	0.42
Unweighted n	7,838	7,838	7,838
Weighted n (in 1000s)	1,194	1,194	1,194
Female	3.1	2.9	0.1
S.E.	0.64	0.63	0.06
Unweighted n	8,660	8,660	8,660
Weighted n (in 1000s)	1,309	1,309	1,309
Race–ethnicity			
American Indian/Alaskan Native	11.0	9.9	1.0
S.E.	4.11	3.62	1.04
Unweighted n	84	84	84
Weighted n (in 1000s)	12	12	12
Asian/Pacific Islander	6.8	6.7	0.1
S.E.	1.79	1.80	0.08
Unweighted n	682	682	682
Weighted n (in 1000s)	86	86	86
Black, non-Hispanic	9.6	8.9	0.7
S.E.	1.42	1.46	0.17
Unweighted n	2,324	2,324	2,324
Weighted n (in 1000s)	347	347	347
Hispanic	7.3	6.8	0.5
S.E.	1.32	1.32	0.23
Unweighted n	1,448	1,448	1,448
Weighted n (in 1000s)	194	194	194
White, non-Hispanic	9.9	9.3	0.8
S.E.	0.92	0.93	0.28
Unweighted n	11,403	11,403	11,403
Weighted n (in 1000s)	1,778	1,778	1,778
1994	11.3	7.9	4.2
S.E.	0.83	0.67	0.71
Unweighted n	23,706	23,706	23,706
Weighted n (in 1000s)	2,213	2,213	2,213
Gender			
Male	19.9	13.8	7.4
S.E.	1.49	1.19	1.33
Unweighted n	11,472	11,472	11,472
Weighted n (in 1000s)	1,083	1,083	1,083

Table A45—Standard errors for table 48: Percentage of public high school graduates completing introductory technology coursework, by type of course: 1982, 1990, and 1994—Continued

	Introductory technology		
Year	Total	Industrial arts	Technology education
Female	3.1	2.1	1.0
S.E.	0.37	0.30	0.22
Unweighted n	12,193	12,193	12,193
Weighted n (in 1000s)	1,126	1,126	1,126
Race–ethnicity			
American Indian/Alaskan Native	15.6	11.0	4.6
S.E.	3.51	3.53	2.14
Unweighted n	188	188	188
Weighted n (in 1000s)	17	17	17
Asian/Pacific Islander	5.6	4.3	1.6
S.E.	1.16	0.85	0.80
Unweighted n	1,215	1,215	1,215
Weighted n (in 1000s)	74	74	74
Black, non-Hispanic	11.1	6.8	4.6
S.E.	1.10	0.80	0.92
Unweighted n	3,953	3,953	3,953
Weighted n (in 1000s)	263	263	263
Hispanic	9.0	5.7	3.7
S.E.	2.24	1.12	1.72
Unweighted n	2,747	2,747	2,747
Weighted n (in 1000s)	168	168	168
White, non-Hispanic	12.0	8.5	4.2
S.E.	0.98	0.81	0.89
Unweighted n	14,526	14,526	14,526
Weighted n (in 1000s)	1,564	1,564	1,564

SOURCE: U.S. Department of Education, National Center for Education Statistics, High School and Beyond Sophomore Cohort 1982 High School Transcript Study and 1990 and 1994 National Assessment of Educational Progress High School Transcript Studies.

Table A46—Standard errors for table 49: Percentage distribution of public school teachers of grades 9 through 12 according to highest educational degree, by teaching assignment and vocational program area: 1990–91 and 1993–94

Teaching assignment and vocational program area	1990–91					1993–94				
	Less than bachelor's	Bachelor's	Master's	Educational specialist	Doctorate or first-professional	Less than bachelor's	Bachelor's	Master's	Educational specialist	Doctorate or first-professional
Total	1.7	45.4	46.4	5.3	1.3	1.7	46.3	45.6	5.3	1.1
S.E.	0.14	0.58	0.61	0.26	0.11	0.13	0.39	0.37	0.16	0.07
Unweighted n	23,650	23,650	23,650	23,650	23,650	22,552	22,552	22,552	22,552	22,552
Weighted n (in 1000s)	861	861	861	861	861	742	742	742	742	742
Teaching assignment										
Vocational education	8.3	45.5	41.4	4.5	0.3	8.3	46.7	38.7	5.6	0.7
S.E.	0.71	0.97	1.04	0.39	0.12	0.69	0.82	0.78	0.43	0.16
Unweighted n	4,384	4,384	4,384	4,384	4,384	3,687	3,687	3,687	3,687	3,687
Weighted n (in 1000s)	146	146	146	146	146	114	114	114	114	114
Academic education	0.3	45.7	47.4	5.1	1.5	0.5	46.8	46.6	4.9	1.2
S.E.	0.06	0.69	0.70	0.28	0.14	0.05	0.47	0.45	0.16	0.09
Unweighted n	16,791	16,791	16,791	16,791	16,791	16,626	16,626	16,626	16,626	16,626
Weighted n (in 1000s)	627	627	627	627	627	559	559	559	559	559
Special education	0.2	42.5	47.0	8.4	1.9	0.2	41.3	49.4	8.2	0.9
S.E.	0.12	1.37	1.27	0.73	0.41	0.11	1.06	1.04	0.62	0.27
Unweighted n	2,475	2,475	2,475	2,475	2,475	2,239	2,239	2,239	2,239	2,239
Weighted n (in 1000s)	88	88	88	88	88	69	69	69	69	69
Vocational program area										
Agriculture	1.5	51.3	42.7	3.9	0.6	1.7	51.9	42.7	2.5	1.2
S.E.	0.66	3.05	3.23	1.18	0.43	0.87	3.26	3.17	0.61	0.73
Unweighted n	348	348	348	348	348	332	332	332	332	332
Weighted n (in 1000s)	9	9	9	9	9	9	9	9	9	9
Business and accounting	0.6	43.1	50.4	5.6	0.3	0.7	48.2	44.5	6.5	0.1
S.E.	0.33	1.63	1.77	0.88	0.19	0.35	1.53	1.72	0.77	0.04
Unweighted n	1,310	1,310	1,310	1,310	1,310	1,058	1,058	1,058	1,058	1,058
Weighted n (in 1000s)	47	47	47	47	47	33	33	33	33	33
Career education	0.5	42.7	47.5	9.2	0.0	5.5	39.1	42.1	10.6	2.7
S.E.	0.45	9.13	9.52	2.99	0.00	4.67	5.85	4.95	3.35	1.59
Unweighted n	59	59	59	59	59	68	68	68	68	68
Weighted n (in 1000s)	2	2	2	2	2	2	2	2	2	2
Health occupations	17.9	44.4	26.1	11.6	0.0	15.1	49.5	20.4	15.0	0.0
S.E.	5.48	7.19	7.84	6.01	0.00	4.72	5.27	4.52	3.59	0.00
Unweighted n	87	87	87	87	87	65	65	65	65	65
Weighted n (in 1000s)	3	3	3	3	3	2	2	2	2	2

Table A46—Standard errors for table 49: Percentage distribution of public school teachers of grades 9 through 12 according to highest educational degree, by teaching assignment and vocational program area: 1990–91 and 1993–94—Continued

Teaching assignment and vocational program area	1990–91					1993–94				
	Less than bachelor's	Bachelor's	Master's	Educational specialist	Doctorate or first-professional	Less than bachelor's	Bachelor's	Master's	Educational specialist	Doctorate or first-professional
Home economics	0.3	58.8	37.9	2.7	0.4	0.1	59.2	36.3	3.4	1.0
S.E.	0.13	2.11	2.09	0.55	0.24	0.03	2.08	2.08	0.82	0.46
Unweighted n	814	814	814	814	814	710	710	710	710	710
Weighted n (in 1000s)	26	26	26	26	26	21	21	21	21	21
Industrial arts	4.0	46.9	44.8	4.3	0.0	2.4	45.7	45.2	5.1	1.6
S.E.	1.00	2.28	2.23	1.11	0.00	0.62	2.47	2.74	1.00	0.61
Unweighted n	651	651	651	651	651	526	526	526	526	526
Weighted n (in 1000s)	23	23	23	23	23	16	16	16	16	16
Technical	24.7	39.0	33.1	3.2	0.0	16.0	46.3	34.3	0.9	2.5
S.E.	4.72	8.56	7.46	1.97	0.00	2.90	4.62	4.15	0.98	1.79
Unweighted n	117	117	117	117	117	114	114	114	114	114
Weighted n (in 1000s)	4	4	4	4	4	3	3	3	3	3
Trade and industry	45.4	29.3	21.8	3.3	0.2	39.1	29.5	24.6	6.6	0.2
S.E.	3.19	3.36	2.21	1.02	0.14	2.98	2.72	2.32	1.53	0.14
Unweighted n	522	522	522	522	522	287	287	287	287	287
Weighted n (in 1000s)	15	15	15	15	15	9	9	9	9	9
Other	18.1	43.4	32.2	4.8	1.6	12.5	40.0	41.0	6.4	0.1
S.E.	3.57	3.54	3.12	1.00	1.08	4.12	3.27	3.37	1.93	0.05
Unweighted n	346	346	346	346	346	251	251	251	251	251
Weighted n (in 1000s)	12	12	12	12	12	9	9	9	9	9
Mixed*	2.9	41.8	51.7	3.6	0.0	32.2	34.8	25.0	7.1	0.9
S.E.	1.54	5.05	5.08	1.95	0.00	3.49	3.12	3.00	1.77	0.93
Unweighted n	130	130	130	130	130	276	276	276	276	276
Weighted n (in 1000s)	4	4	4	4	4	10	10	10	10	10

*"Mixed" indicates that the teacher taught equal proportions in two or more vocational subjects.

NOTE: Percentages may not add to 100 due to rounding. Row n's may not add to total n's because of missing data. Estimates appearing as 0.0 or 0.00 may be nonzero but less than 0.05 or 0.005.

SOURCE: U.S. Department of Education, National Center for Education Statistics, Schools and Staffing Survey, 1990–91 and 1993–94.

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Table A47—Standard errors for table 50: Percentage distribution of public school teachers of grades 9 through 12 according to major field of highest degree, by teaching assignment: 1990–91 and 1993–94

Teaching assignment	Math and science	Social science	Letters and humanities	General education	Special education	Vocational education	Occupationally specific	Other
				1990–91				
Total	7.0	5.8	9.9	41.6	6.6	11.3	3.7	14.1
S.E.	0.20	0.24	0.27	0.42	0.22	0.25	0.22	0.40
Unweighted n	23,295	23,295	23,295	23,295	23,295	23,295	23,295	23,295
Weighted n (in 1000s)	850	850	850	850	850	850	850	850
Vocational education	0.7	1.3	1.1	13.0	0.9	59.7	9.0	14.2
S.E.	0.15	0.27	0.21	0.85	0.21	1.09	0.69	0.79
Unweighted n	4,067	4,067	4,067	4,067	4,067	4,067	4,067	4,067
Weighted n (in 1000s)	137	137	137	137	137	137	137	137
Academic education	9.3	6.9	12.8	50.7	1.2	1.7	2.9	14.4
S.E.	0.27	0.29	0.34	0.61	0.19	0.13	0.22	0.47
Unweighted n	16,757	16,757	16,757	16,757	16,757	16,757	16,757	16,757
Weighted n (in 1000s)	625	625	625	625	625	625	625	625
Special education	0.8	4.8	2.3	21.4	54.2	3.6	1.4	11.4
S.E.	0.23	0.49	0.36	1.29	1.37	0.76	0.30	0.92
Unweighted n	2,471	2,471	2,471	2,471	2,471	2,471	2,471	2,471
Weighted n (in 1000s)	87	87	87	87	87	87	87	87
				1993–94				
Total	8.2	5.4	10.4	41.1	6.3	10.0	4.3	14.3
S.E.	0.22	0.16	0.22	0.41	0.17	0.18	0.13	0.28
Unweighted n	22,181	22,181	22,181	22,181	22,181	22,181	22,181	22,181
Weighted n (in 1000s)	729	729	729	729	729	729	729	729
Vocational education	0.7	1.0	1.2	12.9	1.0	56.8	11.5	14.8
S.E.	0.16	0.18	0.28	0.70	0.16	0.95	0.47	0.74
Unweighted n	3,423	3,423	3,423	3,423	3,423	3,423	3,423	3,423
Weighted n (in 1000s)	104	104	104	104	104	104	104	104
Academic education	10.5	6.3	13.2	48.8	1.1	2.1	3.3	14.6
S.E.	0.30	0.20	0.27	0.44	0.08	0.12	0.13	0.32
Unweighted n	16,522	16,522	16,522	16,522	16,522	16,522	16,522	16,522
Weighted n (in 1000s)	556	556	556	556	556	556	556	556
Special education	0.8	4.7	1.6	21.4	55.9	2.6	2.2	10.9
S.E.	0.29	0.46	0.33	0.80	1.05	0.43	0.46	0.83
Unweighted n	2,236	2,236	2,236	2,236	2,236	2,236	2,236	2,236
Weighted n (in 1000s)	69	69	69	69	69	69	69	69

NOTE: Percentages may not add to 100 due to rounding. Row n's may not add to total n's because of missing data.

SOURCE: U.S. Department of Education, National Center for Education Statistics, Schools and Staffing Survey, 1990–91 and 1993–94.

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Table A48—Standard errors for table 51: Percentage distribution of public school teachers of grades 9 through 12 according to years of teaching experience, by teaching assignment: 1990–91 and 1993–94

Teaching assignment	1990–91 Less than 3 years	1990–91 3–9 years	1990–91 10–20 years	1990–91 More than 20 years	1993–94 Less than 3 years	1993–94 3–9 years	1993–94 10–20 years	1993–94 More than 20 years
Total	6.1	21.4	40.9	31.6	7.8	21.8	34.6	35.8
S.E.	0.19	0.42	0.44	0.51	0.21	0.32	0.32	0.37
Unweighted n	23,650	23,650	23,650	23,650	22,552	22,552	22,552	22,552
Weighted n (in 1000s)	861	861	861	861	742	742	742	742
Vocational education	5.1	20.5	42.5	31.9	5.9	19.7	37.4	37.1
S.E.	0.39	0.84	0.83	0.84	0.44	0.77	1.03	0.97
Unweighted n	4,384	4,384	4,384	4,384	3,687	3,687	3,687	3,687
Weighted n (in 1000s)	146	146	146	146	114	114	114	114
Academic education	6.3	20.5	39.6	33.6	8.4	21.6	32.6	37.4
S.E.	0.28	0.53	0.56	0.67	0.26	0.37	0.37	0.41
Unweighted n	16,791	16,791	16,791	16,791	16,626	16,626	16,626	16,626
Weighted n (in 1000s)	627	627	627	627	559	559	559	559
Special education	7.0	29.4	47.3	16.3	6.8	26.7	46.4	20.1
S.E.	0.68	1.29	1.33	1.10	0.54	0.93	1.19	1.21
Unweighted n	2,475	2,475	2,475	2,475	2,239	2,239	2,239	2,239
Weighted n (in 1000s)	88	88	88	88	69	69	69	69

NOTE: Percentages may not add to 100 due to rounding. Row n's may not add to total n's because of missing data.

SOURCE: U.S. Department of Education, National Center for Education Statistics, Schools and Staffing Survey, 1990–91 and 1993–94.

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Table A49—Standard errors for table 52: Percentage distribution of public school teachers of grades 9 through 12 according to type of credential in primary assignment field, by teaching assignment: 1990–91 and 1993–94

Teaching assignment	None	Standard	Probationary	Temporary[1]	Alternative[2]	Advanced[2]	Other[2]
1990–91							
Total	2.2	76.3	2.6	3.1	—	—	15.9
S.E.	0.15	0.42	0.15	0.16	—	—	0.34
Unweighted n	23,650	23,650	23,650	23,650	—	—	23,650
Weighted n (in 1000s)	861	861	861	861	—	—	861
Vocational education	1.0	77.4	2.1	3.9	—	—	15.7
S.E.	0.24	0.81	0.28	0.37	—	—	0.70
Unweighted n	4,384	4,384	4,384	4,384	—	—	4,384
Weighted n (in 1000s)	146	146	146	146	—	—	146
Academic education	2.3	76.6	2.6	2.8	—	—	15.7
S.E.	0.18	0.44	0.19	0.19	—	—	0.36
Unweighted n	16,791	16,791	16,791	16,791	—	—	16,791
Weighted n (in 1000s)	627	627	627	627	—	—	627
Special education	3.7	72.0	2.7	4.5	—	—	17.1
S.E.	0.56	1.33	0.39	0.53	—	—	0.94
Unweighted n	2,475	2,475	2,475	2,475	—	—	2,475
Weighted n (in 1000s)	88	88	88	88	—	—	88
1993–94							
Total	2.7	74.6	1.6	3.9	1.0	16.1	—
S.E.	0.15	0.30	0.10	0.18	0.10	0.29	—
Unweighted n	22,552	22,552	22,552	22,552	22,552	22,552	—
Weighted n (in 1000s)	742	742	742	742	742	742	—
Vocational education	1.2	74.6	0.8	4.7	2.0	16.7	—
S.E.	0.19	0.80	0.12	0.38	0.32	0.63	—
Unweighted n	3,687	3,687	3,687	3,687	3,687	3,687	—
Weighted n (in 1000s)	114	114	114	114	114	114	—
Academic education	2.9	75.2	1.8	3.4	0.8	16.0	—
S.E.	0.20	0.34	0.11	0.16	0.10	0.32	—
Unweighted n	16,626	16,626	16,626	16,626	16,626	16,626	—
Weighted n (in 1000s)	559	559	559	559	559	559	—
Special education	3.6	70.1	1.7	6.9	1.3	16.4	—
S.E.	0.44	1.07	0.35	0.66	0.26	0.86	—
Unweighted n	2,239	2,239	2,239	2,239	2,239	2,239	—
Weighted n (in 1000s)	69	69	69	69	69	69	—

—Not applicable.

[1] In 1993–94, the "temporary" category also included "provisional" and "emergency" credential.

[2] In 1993–94, rather than including an "other" category, the survey asked about "alternative" and "advanced" credentials.

NOTE: Percentages may not add to 100 due to rounding. Row n's may not add to total n's because of missing data.

SOURCE: U.S. Department of Education, National Center for Education Statistics, Schools and Staffing Survey, 1990–91 and 1993–94.

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Table A50—Standard errors for table 53: Percentage distribution of public school teachers of grades 9 through 12 according to age in current school year and age when began teaching, by teaching assignment: 1990–91 and 1993–94

	Age in current year				Age began teaching				
Teaching assignment	Less than 30 years	30–39 years	40–49 years	50 years or more	25 years or less	26–35 years	36–45 years	46–55 years	More than 55 years
					1990–91				
Total	11.0	26.9	41.1	21.0	69.8	22.9	6.0	1.1	0.1
S.E.	0.34	0.37	0.47	0.45	0.43	0.37	0.21	0.10	0.03
Unweighted n	23,650	23,650	23,650	23,650	23,650	23,650	23,650	23,650	23,650
Weighted n (in 1000s)	861	861	861	861	861	861	861	861	861
Vocational education	8.4	24.8	39.6	27.2	62.6	25.4	9.9	1.9	0.3
S.E.	0.60	0.72	0.93	0.92	1.24	0.96	0.67	0.28	0.10
Unweighted n	4,384	4,384	4,384	4,384	4,384	4,384	4,384	4,384	4,384
Weighted n (in 1000s)	146	146	146	146	146	146	146	146	146
Academic education	11.5	26.1	42.1	20.3	72.2	21.9	5.0	0.8	0.1
S.E.	0.41	0.48	0.58	0.55	0.50	0.45	0.23	0.09	0.03
Unweighted n	16,791	16,791	16,791	16,791	16,791	16,791	16,791	16,791	16,791
Weighted n (in 1000s)	627	627	627	627	627	627	627	627	627
Special education	12.2	36.0	36.2	15.6	64.8	26.0	7.1	2.0	0.1
S.E.	0.91	1.51	1.28	1.10	1.66	1.49	0.79	0.39	0.07
Unweighted n	2,475	2,475	2,475	2,475	2,475	2,475	2,475	2,475	2,475
Weighted n (in 1000s)	88	88	88	88	88	88	88	88	88
					1993–94				
Total	9.8	21.6	40.8	27.8	61.0	29.7	7.6	1.5	0.2
S.E.	0.23	0.26	0.33	0.30	0.33	0.32	0.18	0.08	0.03
Unweighted n	22,552	22,552	22,552	22,552	22,552	22,552	22,552	22,552	22,552
Weighted n (in 1000s)	742	742	742	742	742	742	742	742	742
Vocational education	6.2	19.8	41.5	32.6	54.6	31.8	11.0	2.4	0.2
S.E.	0.40	0.77	0.79	0.81	0.83	0.68	0.71	0.32	0.08
Unweighted n	3,687	3,687	3,687	3,687	3,687	3,687	3,687	3,687	3,687
Weighted n (in 1000s)	114	114	114	114	114	114	114	114	114
Academic education	10.6	21.3	40.7	27.5	63.0	29.1	6.5	1.3	0.1
S.E.	0.27	0.30	0.38	0.34	0.41	0.37	0.19	0.09	0.03
Unweighted n	16,626	16,626	16,626	16,626	16,626	16,626	16,626	16,626	16,626
Weighted n (in 1000s)	559	559	559	559	559	559	559	559	559
Special education	8.9	27.8	40.7	22.6	55.3	31.1	10.8	2.3	0.4
S.E.	0.56	1.01	1.12	1.09	0.89	0.93	0.71	0.32	0.17
Unweighted n	2,239	2,239	2,239	2,239	2,239	2,239	2,239	2,239	2,239
Weighted n (in 1000s)	69	69	69	69	69	69	69	69	69

NOTE: Percentages may not add to 100 due to rounding. Row n's may not add to total n's because of missing data.

SOURCE: U.S. Department of Education, National Center for Education Statistics, Schools and Staffing Survey, 1990–91 and 1993–94.

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Table A51—Standard errors for table 54: Percentage distribution of public school teachers of grades 9 through 12 according to sex, by teaching assignment: 1990–91 and 1993–94

	1990–91		1993–94	
Teaching assignment	Male	Female	Male	Female
Total	48.6	51.4	48.4	51.6
S.E.	0.49	0.49	0.41	0.41
Unweighted n	23,650	23,650	22,552	22,552
Weighted n (in 1000s)	861	861	742	742
Vocational education	51.7	48.3	52.1	47.9
S.E.	1.11	1.11	0.96	0.96
Unweighted n	4,384	4,384	3,687	3,687
Weighted n (in 1000s)	146	146	114	114
Academic education	50.8	49.2	50.1	49.9
S.E.	0.60	0.60	0.42	0.42
Unweighted n	16,791	16,791	16,626	16,626
Weighted n (in 1000s)	627	627	559	559
Special education	28.3	71.7	27.7	72.3
S.E.	1.12	1.12	0.95	0.95
Unweighted n	2,475	2,475	2,239	2,239
Weighted n (in 1000s)	88	88	69	69

NOTE: Percentages may not add to 100 due to rounding. Row n's may not add to total n's because of missing data.

SOURCE: U.S. Department of Education, National Center for Education Statistics, Schools and Staffing Survey, 1990–91 and 1993–94.

Table A52—Standard errors for table 55: Percentage distribution of public school teachers of grades 9 through 12 according to race–ethnicity, by teaching assignment: 1990–91 and 1993–94

	1990–91					1993–94				
Teaching assignment	White, non-Hispanic	Black, non-Hispanic	Hispanic	Asian/ Pacific Islander	American Indian/ Alaskan Native	White, non-Hispanic	Black, non-Hispanic	Hispanic	Asian/ Pacific Islander	American Indian/ Alaskan Native
Total	89.1	6.6	2.8	0.8	0.7	89.1	5.8	3.4	0.9	0.7
S.E.	0.41	0.42	0.18	0.06	0.06	0.36	0.23	0.23	0.07	0.06
Unweighted n	23,650	23,650	23,650	23,650	23,650	22,552	22,552	22,552	22,552	22,552
Weighted n (in 1000s)	861	861	861	861	861	742	742	742	742	742
Vocational education	87.8	8.7	2.0	0.7	0.9	88.7	7.2	2.6	0.8	0.7
S.E.	0.63	0.53	0.35	0.08	0.23	0.67	0.46	0.39	0.12	0.10
Unweighted n	4,384	4,384	4,384	4,384	4,384	3,687	3,687	3,687	3,687	3,687
Weighted n (in 1000s)	146	146	146	146	146	114	114	114	114	114
Academic education	89.6	5.8	3.1	0.9	0.6	89.4	5.3	3.6	0.9	0.7
S.E.	0.53	0.58	0.23	0.07	0.07	0.37	0.25	0.25	0.08	0.07
Unweighted n	16,791	16,791	16,791	16,791	16,791	16,626	16,626	16,626	16,626	16,626
Weighted n (in 1000s)	627	627	627	627	627	559	559	559	559	559
Special education	88.3	8.4	1.7	0.7	0.9	87.4	7.7	3.1	0.8	1.0
S.E.	0.65	0.57	0.27	0.12	0.18	0.82	0.61	0.51	0.16	0.24
Unweighted n	2,475	2,475	2,475	2,475	2,475	2,239	2,239	2,239	2,239	2,239
Weighted n (in 1000s)	88	88	88	88	88	69	69	69	69	69

NOTE: Percentages may not add to 100 due to rounding. Row n's may not add to total n's because of missing data.

SOURCE: U.S. Department of Education, National Center for Education Statistics, Schools and Staffing Survey, 1990–91 and 1993–94.

Table A53—Standard errors for table 56: Percentage of public school teachers of grades 9 through 12 who reported participating in various professional development activities, by teaching assignment and vocational teachers by school type: 1993–94

			Professional development activities								
Teaching assignment and vocational teachers by school type	None	All	Teaching induction program	District-sponsored workshops	School-sponsored workshops	Extension/adult education courses	College courses in subject field	Professional development association activities	Curriculum integration committee	Other curriculum committee	Books/materials committee
Total	3.8	1.9	25.9	84.2	78.4	25.6	24.4	52.2	23.6	38.6	29.6
S.E.	0.15	0.11	0.35	0.28	0.33	0.39	0.28	0.35	0.32	0.36	0.32
Unweighted n	22,552	22,552	22,552	22,552	22,552	22,552	22,552	22,552	22,552	22,552	22,552
Weighted n (in 1000s)	742	742	742	742	742	742	742	742	742	742	742
Teaching assignment											
Vocational education	3.6	2.9	25.9	82.3	77.9	30.4	24.4	57.9	43.2	37.2	26.9
S.E.	0.27	0.32	0.89	0.65	0.64	0.87	0.76	0.81	0.94	0.85	0.86
Unweighted n	3,687	3,687	3,687	3,687	3,687	3,687	3,687	3,687	3,687	3,687	3,687
Weighted n (in 1000s)	114	114	114	114	114	114	114	114	114	114	114
Academic education	3.9	1.8	25.8	84.3	78.1	24.7	23.8	51.5	19.4	40.2	32.1
S.E.	0.17	0.11	0.39	0.33	0.36	0.41	0.29	0.43	0.35	0.43	0.37
Unweighted n	16,626	16,626	16,626	16,626	16,626	16,626	16,626	16,626	16,626	16,626	16,626
Weighted n (in 1000s)	559	559	559	559	559	559	559	559	559	559	559
Special education	2.9	1.4	26.0	86.3	81.9	25.0	28.8	47.9	24.6	28.5	14.1
S.E.	0.41	0.3	1.09	0.92	0.73	0.94	1.03	0.84	0.99	1.27	0.96
Unweighted n	2,239	2,239	2,239	2,239	2,239	2,239	2,239	2,239	2,239	2,239	2,239
Weighted n (in 1000s)	69	69	69	69	69	69	69	69	69	69	69
Vocational teachers by school type											
Comprehensive high school	3.6	2.8	24.4	83.8	77.9	29.2	24.1	57.8	43.0	37.6	27.4
S.E.	0.31	0.34	0.94	0.62	0.73	0.91	0.8	0.95	1.01	0.87	0.97
Unweighted n	3,130	3,130	3,130	3,130	3,130	3,130	3,130	3,130	3,130	3,130	3,130
Weighted n (in 1000s)	98	98	98	98	98	98	98	98	98	98	98
Vocational high school	3.4	2.7	36.0	69.2	76.2	41.2	27.7	58.1	43.7	33.9	24.5
S.E.	0.8	0.71	3.19	3.22	2.36	2.96	2.13	2.62	3.78	2.45	2.27
Unweighted n	376	376	376	376	376	376	376	376	376	376	376
Weighted n (in 1000s)	11	11	11	11	11	11	11	11	11	11	11
Other	4.6	5.1	34.1	81.3	82.1	31.6	24.1	59.3	45.9	36.9	22.2
S.E.	1.4	2.11	3.14	3.01	2.78	5.22	3.96	4.5	4.76	4.43	3.83
Unweighted n	181	181	181	181	181	181	181	181	181	181	181
Weighted n (in 1000s)	5	5	5	5	5	5	5	5	5	5	5

NOTE: Row n's may not add to total n's because of missing data.

SOURCE: U.S. Department of Education, National Center for Education Statistics, Schools and Staffing Survey, 1993–94.

Table A54—Standard errors for table 57: Percentage of public school teachers of grades 9 through 12 who reported participating in inservice/professional development activities focusing on various topics, by teaching assignment and vocational teachers by school type: 1993–94

Teaching assignment and vocational teachers by school type	None	All	Inservice/professional development activities				
			Uses of educational technology	Methods of teaching in subject field	In-depth study in subject field	Student assessment	Cooperative learning in class
Total	14.5	8.6	51.1	54.2	27.4	45.0	48.1
S.E.	0.30	0.17	0.45	0.43	0.27	0.47	0.49
Unweighted n	22,552	22,552	22,552	22,552	22,552	22,552	22,552
Weighted n (in 1000s)	742	742	742	742	742	742	742
Teaching assignment							
Vocational education	14.4	10.5	58.0	49.0	31.1	43.5	47.6
S.E.	0.61	0.63	0.92	0.91	0.84	0.96	0.93
Unweighted n	3,687	3,687	3,687	3,687	3,687	3,687	3,687
Weighted n (in 1000s)	114	114	114	114	114	114	114
Academic education	14.7	7.9	50.4	54.7	26.0	44.9	47.8
S.E.	0.31	0.19	0.52	0.49	0.30	0.48	0.49
Unweighted n	16,626	16,626	16,626	16,626	16,626	16,626	16,626
Weighted n (in 1000s)	559	559	559	559	559	559	559
Special education	13.0	10.8	45.0	59.2	32.0	48.1	51.0
S.E.	0.95	0.91	1.39	1.17	1.23	1.16	1.37
Unweighted n	2,239	2,239	2,239	2,239	2,239	2,239	2,239
Weighted n (in 1000s)	69	69	69	69	69	69	69
Vocational teachers by school type							
Comprehensive high school	14.0	10.6	59.2	48.3	30.4	43.2	48.0
S.E.	0.62	0.71	1.07	1.04	0.91	1.03	0.98
Unweighted n	3,130	3,130	3,130	3,130	3,130	3,130	3,130
Weighted n (in 1000s)	98	98	98	98	98	98	98
Vocational high school	17.9	10.0	48.1	51.0	38.8	43.9	43.2
S.E.	2.38	1.86	2.51	2.21	2.50	2.65	2.58
Unweighted n	376	376	376	376	376	376	376
Weighted n (in 1000s)	11	11	11	11	11	11	11
Other	13.9	10.1	54.5	57.5	28.4	49.2	49.7
S.E.	2.37	2.66	3.95	3.53	3.54	4.07	4.18
Unweighted n	181	181	181	181	181	181	181
Weighted n (in 1000s)	5	5	5	5	5	5	5

NOTE: Row n's may not add to total n's because of missing data.

SOURCE: U.S. Department of Education, National Center for Education Statistics, Schools and Staffing Survey, 1993–94.

Table A55—Standard errors for table 58: Percentage of public school teachers of grades 9 through 12 who agreed with various statements about the impact of professional development activities, by teaching assignment: 1993–94

Teaching assignment	Had some impact	Provided new information	Changed views on teaching	Caused to change teaching practices	Caused to seek information/ training	Was a waste of time
Total	96.2	83.5	38.4	59.0	58.7	13.7
S.E.	0.16	0.33	0.45	0.39	0.39	0.33
Unweighted n	19,292	19,292	19,292	19,292	19,292	19,292
Weighted n (in 1000s)	634	634	634	634	634	634
Vocational education	96.2	86.1	38.5	58.3	60.4	11.1
S.E.	0.32	0.75	1.07	1.10	0.78	0.72
Unweighted n	3,159	3,159	3,159	3,159	3,159	3,159
Weighted n (in 1000s)	97	97	97	97	97	97
Academic education	96.1	82.9	38.6	59.1	57.9	14.5
S.E.	0.20	0.37	0.51	0.48	0.48	0.45
Unweighted n	14,183	14,183	14,183	14,183	14,183	14,183
Weighted n (in 1000s)	477	477	477	477	477	477
Special education	96.8	84.3	36.4	59.4	62.5	11.2
S.E.	0.39	0.88	1.24	1.17	1.18	0.89
Unweighted n	1,950	1,950	1,950	1,950	1,950	1,950
Weighted n (in 1000s)	60	60	60	60	60	60

NOTE: Row n's may not add to total n's because of missing data.

SOURCE: U.S. Department of Education, National Center for Education Statistics, Schools and Staffing Survey, 1993–94.

Table A56—Standard errors for table 59: Percentage of public school teachers of grades 9 through 12 who reported receiving various types of support for inservice/professional development activities, by teaching assignment: 1993–94

Teaching assignment	None	All	Types of support Release time	Scheduled time	Travel and/ or per diem	Tuition and/ or fees	Professional growth credits
Total	27.2	3.1	43.2	35.2	27.7	20.5	28.8
S.E.	0.37	0.14	0.41	0.45	0.34	0.33	0.37
Unweighted n	22,552	22,552	22,552	22,552	22,552	22,552	22,552
Weighted n (in 1000s)	742	742	742	742	742	742	742
Vocational education	24.9	3.3	42.8	34.8	37.3	21.3	32.2
S.E.	0.92	0.28	1.23	0.76	0.91	0.77	0.86
Unweighted n	3,687	3,687	3,687	3,687	3,687	3,687	3,687
Weighted n (in 1000s)	114	114	114	114	114	114	114
Academic education	28.4	2.9	42.5	34.6	26.4	20.1	27.8
S.E.	0.41	0.16	0.48	0.52	0.43	0.39	0.46
Unweighted n	16,626	16,626	16,626	16,626	16,626	16,626	16,626
Weighted n (in 1000s)	559	559	559	559	559	559	559
Special education	21.2	4.1	49.7	40.2	22.6	22.9	31.1
S.E.	1.09	0.42	1.21	1.11	1.00	1.10	1.09
Unweighted n	2,239	2,239	2,239	2,239	2,239	2,239	2,239
Weighted n (in 1000s)	69	69	69	69	69	69	69

NOTE: Row n's may not add to total n's because of missing data.

SOURCE: U.S. Department of Education, National Center for Education Statistics, Schools and Staffing Survey, 1993–94.

Table A57—Standard errors for table 60: Percentage distribution of public school teachers of grades 9 through 12 according to age when began teaching and highest educational degree, by teaching assignment and vocational teachers by school type: 1993–94

	Age began teaching					Highest educational degree				
	25 years or less	26–35 years	36–45 years	46–55 years	More than 55 years	Less than bachelor's	Bachelor's	Master's	Educational specialist	Doctorate or first-professional
Total	61.0	29.7	7.6	1.5	0.2	1.7	46.3	45.6	5.3	1.1
S.E.	0.33	0.32	0.18	0.08	0.03	0.13	0.39	0.37	0.16	0.07
Unweighted n	22,552	22,552	22,552	22,552	22,552	22,552	22,552	22,552	22,552	22,552
Weighted n (in 1000s)	742	742	742	742	742	742	742	742	742	742
Teaching assignment										
Vocational education	54.6	31.8	11.0	2.4	0.2	8.3	46.7	38.7	5.6	0.7
S.E.	0.83	0.68	0.71	0.32	0.08	0.69	0.82	0.78	0.43	0.16
Unweighted n	3,687	3,687	3,687	3,687	3,687	3,687	3,687	3,687	3,687	3,687
Weighted n (in 1000s)	114	114	114	114	114	114	114	114	114	114
Academic education	63.0	29.1	6.5	1.3	0.1	0.5	46.8	46.6	4.9	1.2
S.E.	0.41	0.37	0.19	0.09	0.03	0.05	0.47	0.45	0.16	0.09
Unweighted n	16,626	16,626	16,626	16,626	16,626	16,626	16,626	16,626	16,626	16,626
Weighted n (in 1000s)	559	559	559	559	559	559	559	559	559	559
Special education	55.3	31.1	10.8	2.3	0.4	0.2	41.3	49.4	8.2	0.9
S.E.	0.89	0.93	0.71	0.32	0.17	0.11	1.06	1.04	0.62	0.27
Unweighted n	2,239	2,239	2,239	2,239	2,239	2,239	2,239	2,239	2,239	2,239
Weighted n (in 1000s)	69	69	69	69	69	69	69	69	69	69
Vocational teachers by school type										
Comprehensive high school	58.1	30.5	9.6	1.7	0.2	4.8	48.9	39.9	5.7	0.7
S.E.	0.87	0.74	0.79	0.26	0.09	0.51	0.88	0.82	0.49	0.19
Unweighted n	3,130	3,130	3,130	3,130	3,130	3,130	3,130	3,130	3,130	3,130
Weighted n (in 1000s)	98	98	98	98	98	98	98	98	98	98
Vocational high school	27.5	40.5	21.8	9.8	0.4	38.9	30.1	25.4	4.7	0.9
S.E.	2.87	2.80	2.38	1.89	0.25	2.63	1.92	2.72	1.00	0.48
Unweighted n	376	376	376	376	376	376	376	376	376	376
Weighted n (in 1000s)	11	11	11	11	11	11	11	11	11	11

Table A57—Standard errors for table 60: Percentage distribution of public school teachers of grades 9 through 12 according to age when began teaching and highest educational degree, by teaching assignment and vocational teachers by school type: 1993–94—Continued

	Age began teaching					Highest educational degree				
	25 years or less	26–35 years	36–45 years	46–55 years	More than 55 years	Less than bachelor's	Bachelor's	Master's	Educational specialist	Doctorate or first-professional
Other	46.5	37.8	14.5	0.9	0.3	10.9	39.5	43.5	5.3	0.8
S.E.	4.60	3.82	3.25	0.38	0.14	3.29	3.77	4.56	1.88	0.35
Unweighted n	181	181	181	181	181	181	181	181	181	181
Weighted n (in 1000s)	5	5	5	5	5	5	5	5	5	5

NOTE: Percentages may not add to 100 due to rounding. Row n's may not add to total n's because of missing data.

SOURCE: U.S. Department of Education, National Center for Education Statistics, Schools and Staffing Survey, 1993–94.

Table A58—Standard errors for table 61: Percentage distribution of 1982 public high school graduates according to their enrollment status in postsecondary institutions by 1984, by curriculum specialization and hours worked per week in high school

Curriculum specialization and hours worked	Never enrolled	Enrolled
Total	42.7	57.3
S.E.	0.85	0.85
Unweighted n	5,984	5,984
Weighted n (in 1000s)	2,097	2,097
Curriculum specialization in high school		
College preparatory only	4.4	95.6
S.E.	0.96	0.96
Unweighted n	565	565
Weighted n (in 1000s)	176	176
Vocational concentrators total*	58.5	41.5
S.E.	1.38	1.38
Unweighted n	1,919	1,919
Weighted n (in 1000s)	724	724
Vocational concentration only	59.3	40.8
S.E.	1.38	1.38
Unweighted n	1,871	1,871
Weighted n (in 1000s)	712	712
Both vocational concentration and college preparatory	14.1	85.9
S.E.	6.89	6.89
Unweighted n	48	48
Weighted n (in 1000s)	12	12
Other/general	38.8	61.2
S.E.	1.06	1.06
Unweighted n	3,500	3,500
Weighted n (in 1000s)	1,197	1,197
Hours worked per week in high school		
None	38.1	61.9
S.E.	1.50	1.50
Unweighted n	1,782	1,782
Weighted n (in 1000s)	591	591
1–14	38.1	61.9
S.E.	1.46	1.46
Unweighted n	1,667	1,667
Weighted n (in 1000s)	604	604

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Table A58—Standard errors for table 61: Percentage distribution of 1982 public high school graduates according to their enrollment status in postsecondary institutions by 1984, by curriculum specialization and hours worked per week in high school—Continued

Curriculum specialization and hours worked	Never enrolled	Enrolled
15–34	46.1	53.9
S.E.	1.39	1.39
Unweighted n	1,890	1,890
Weighted n (in 1000s)	666	666
35 or more	58.2	41.8
S.E.	2.99	2.99
Unweighted n	376	376
Weighted n (in 1000s)	136	136

*Includes students who completed both a vocational concentration and a college preparatory curriculum.

NOTE: Percentages may not add to 100 due to rounding. Row n's may not add to total n's because of missing data.

SOURCE: U.S. Department of Education, National Center for Education Statistics, High School and Beyond Sophomore Cohort 1982 High School Transcript Study and Second Follow-up Survey.

Table A59—Standard errors for table 62: Percentage distribution of 1992 public high school graduates according to their enrollment status in postsecondary institutions by 1994, and of those enrolled, percentage distribution according to type of first institution, by curriculum specialization in high school

	Enrollment status		Of those enrolled, type of first institution					
Curriculum specialization	Never enrolled	Enrolled	Public 4-year	Private, not-for-profit 4-year	Public 2-year	Private, not-for-profit 2-year	Public vocational–technical	Private, for-profit
Total	27.0	73.0	39.3	17.3	36.7	0.3	1.6	4.8
S.E.	1.00	1.00	1.23	0.94	1.40	0.08	0.35	0.71
Unweighted n	8,232	8,232	6,110	6,110	6,110	6,110	6,110	6,110
Weighted n (in 1000s)	1,995	1,995	1,456	1,456	1,456	1,456	1,456	1,456
College preparatory only	6.8	93.2	52.3	26.4	18.7	0.0	1.5	1.0
S.E.	0.92	0.92	2.05	1.77	2.12	0.03	0.69	0.23
Unweighted n	2,522	2,522	2,366	2,366	2,366	2,366	2,366	2,366
Weighted n (in 1000s)	610	610	569	569	569	569	569	569
Vocational concentrators total*	45.3	54.7	30.5	8.5	49.9	1.0	1.9	8.3
S.E.	1.90	1.90	1.87	1.03	2.20	0.29	0.46	1.39
Unweighted n	2,056	2,056	1,189	1,189	1,189	1,189	1,189	1,189
Weighted n (in 1000s)	490	490	268	268	268	268	268	268
Vocational concentration only	51.2	48.8	21.8	6.3	58.4	1.2	1.8	10.5
S.E.	2.02	2.02	1.92	0.97	2.43	0.37	0.50	1.75
Unweighted n	1,754	1,754	919	919	919	919	919	919
Weighted n (in 1000s)	421	421	206	206	206	206	206	206
Both vocational concentration and college preparatory	9.4	90.6	58.8	15.7	21.9	0.3	2.2	1.2
S.E.	2.17	2.17	4.20	2.89	3.14	0.31	1.05	0.96
Unweighted n	302	302	270	270	270	270	270	270
Weighted n (in 1000s)	69	69	63	63	63	63	63	63

Table A59—Standard errors for table 62: Percentage distribution of 1992 public high school graduates according to their enrollment status in postsecondary institutions by 1994, and of those enrolled, percentage distribution according to type of first institution, by curriculum specialization in high school—Continued

	Enrollment status		Of those enrolled, type of first institution					
Curriculum specialization	Never enrolled	Enrolled	Public 4-year	Private, not-for-profit 4-year	Public 2-year	Private, not-for-profit 2-year	Public vocational–technical	Private, for-profit
Other/general[1]	30.9	69.1	31.2	12.8	47.4	0.3	1.6	6.8
S.E.	1.54	1.54	1.70	1.11	2.14	0.09	0.46	1.51
Unweighted n	3,654	3,654	2,555	2,555	2,555	2,555	2,555	2,555
Weighted n (in 1000s)	895	895	619	619	619	619	619	619

*Includes students who completed both a vocational concentration and a college preparatory curriculum.

NOTE: Percentages may not add to 100 due to rounding. Row n's may not add to total n's because of missing data. Estimates appearing as 0.0 may be nonzero but less than 0.05.

SOURCE: U.S. Department of Education, National Center for Education Statistics, National Education Longitudinal Study of 1988, Third Follow-up and High School Transcript Study.

Table A60—Standard errors for table 63: Percentage distribution of 1982 public high school graduates enrolled in postsecondary institutions by 1984 according to type of institution, by curriculum specialization and hours worked per week in high school

Curriculum specialization and hours worked	Public 4-year	Private, not-for-profit 4-year	Public 2-year	Private, not-for-profit 2-year	Public vocational–technical	Private, for-profit
Total	38.8	15.3	37.1	1.9	1.8	5.1
S.E.	1.10	0.78	1.14	0.30	0.31	0.49
Unweighted n	3,807	3,807	3,807	3,807	3,807	3,807
Weighted n (in 1000s)	1,356	1,356	1,356	1,356	1,356	1,356
Curriculum specialization in high school						
College preparatory only	53.0	25.1	18.2	1.4	0.3	2.0
S.E.	2.67	2.19	2.22	0.65	0.28	0.94
Unweighted n	548	548	548	548	548	548
Weighted n (in 1000s)	188	188	188	188	188	188
Vocational concentrators total*	27.4	9.9	48.3	3.0	3.3	8.1
S.E.	1.85	1.24	2.10	0.81	0.78	1.20
Unweighted n	914	914	914	914	914	914
Weighted n (in 1000s)	339	339	339	339	339	339
Vocational concentration only	27.6	8.9	48.8	3.1	3.4	8.2
S.E.	1.89	1.23	2.15	0.84	0.81	1.24
Unweighted n	870	870	870	870	870	870
Weighted n (in 1000s)	327	327	327	327	327	327
Both vocational concentration and college preparatory	22.6	38.1	33.0	0.0	0.0	6.3
S.E.	7.98	9.57	11.42	0.00	0.00	4.63
Unweighted n	44	44	44	44	44	44
Weighted n (in 1000s)	11	11	11	11	11	11
Other/general	40.3	15.3	36.8	1.6	1.5	4.6
S.E.	1.35	0.99	1.41	0.33	0.40	0.56
Unweighted n	2,345	2,345	2,345	2,345	2,345	2,345
Weighted n (in 1000s)	829	829	829	829	829	829

Table A60—Standard errors for table 63: Percentage distribution of 1982 public high school graduates enrolled in postsecondary institutions by 1984 according to type of institution, by curriculum specialization and hours worked per week in high school—Continued

Curriculum specialization and hours worked	Public 4-year	Private, not-for-profit 4-year	Public 2-year	Private, not-for-profit 2-year	Public vocational–technical	Private, for-profit
Hours worked per week in high school						
None	39.3	17.3	35.6	1.8	1.2	4.7
S.E.	1.81	1.30	1.82	0.49	0.41	0.91
Unweighted n	1,227	1,227	1,227	1,227	1,227	1,227
Weighted n (in 1000s)	419	419	419	419	419	419
1–14	42.2	17.5	32.3	1.9	1.6	4.4
S.E.	1.80	1.49	1.78	0.55	0.42	0.73
Unweighted n	1,133	1,133	1,133	1,133	1,133	1,133
Weighted n (in 1000s)	419	419	419	419	419	419
15–34	36.9	12.3	40.2	2.3	2.1	6.2
S.E.	1.79	1.27	1.90	0.54	0.58	0.91
Unweighted n	1,134	1,134	1,134	1,134	1,134	1,134
Weighted n (in 1000s)	401	401	401	401	401	401
35 or more	34.3	8.7	46.9	1.1	4.3	4.9
S.E.	4.30	2.91	4.52	0.83	1.92	1.87
Unweighted n	180	180	180	180	180	180
Weighted n (in 1000s)	64	64	64	64	64	64

*Includes students who completed both a vocational concentration and a college preparatory curriculum.

NOTE: Percentages may not add to 100 due to rounding. Row n's may not add to total n's because of missing data. Estimates appearing as 0.0 or 0.00 may be nonzero but less than 0.05 or 0.005.

SOURCE: U.S. Department of Education, National Center for Education Statistics, High School and Beyond Sophomore Cohort 1982 High School Transcript Study and Second Follow-up Survey.

Table A61—Standard errors for table 64: Percentage distribution of 1992 public high school graduates enrolled in postsecondary education in 1994 according to their employment status and work orientation, by curriculum specialization in high school

Curriculum specialization	Not employed	Employed		
			Work orientation	
		Total	Primarily student, also employed	Primarily employed, also student
Total	69.4	30.6	13.6	17.1
S.E.	1.22	1.22	0.76	1.05
Unweighted n	6,000	6,000	6,000	6,000
Weighted n (in 1000s)	1,430	1,430	1,430	1,430
College preparatory only	83.1	16.9	9.4	7.6
S.E.	1.41	1.41	1.10	0.97
Unweighted n	2,359	2,359	2,359	2,359
Weighted n (in 1000s)	561	561	561	561
Vocational concentrators total*	56.0	44.0	17.9	26.1
S.E.	2.44	2.44	1.88	2.00
Unweighted n	1,160	1,160	1,160	1,160
Weighted n (in 1000s)	264	264	264	264
Vocational concentration only	48.9	51.1	20.0	31.1
S.E.	2.67	2.67	2.30	2.30
Unweighted n	882	882	882	882
Weighted n (in 1000s)	200	200	200	200
Both vocational concentration and college preparatory	78.2	21.8	11.3	10.4
S.E.	3.75	3.75	2.36	3.23
Unweighted n	278	278	278	278
Weighted n (in 1000s)	64	64	64	64
Other/general	62.5	37.5	15.6	22.0
S.E.	2.08	2.08	1.26	1.97
Unweighted n	2,481	2,481	2,481	2,481
Weighted n (in 1000s)	605	605	605	605

*Includes students who completed both a vocational concentration and a college preparatory curriculum.

NOTE: Percentages may not add to 100 due to rounding. Row n's may not add to total n's because of missing data.

SOURCE: U.S. Department of Education, National Center for Education Statistics, National Education Longitudinal Study of 1988, Third Follow-up and High School Transcript Study.

Table A62—Standard errors for table 65: Percentage distribution of 1992 public high school graduates according to their education and employment status in 1994, by curriculum specialization in high school

	Education status		Education/employment status					
Curriculum specialization	Student	Nonstudent	Traditional student, not employed	Primarily student, also employed	Primarily employed, also student	Nonstudent, employed	Nonstudent, not employed	Nonstudent, not in labor force
Total	69.1	30.9	47.9	9.4	11.8	27.8	0.9	2.1
S.E.	1.01	1.01	1.09	0.54	0.75	0.98	0.21	0.28
Unweighted n	8,537	8,537	8,537	8,537	8,537	8,537	8,537	8,537
Weighted n (in 1000s)	2,068	2,068	2,068	2,068	2,068	2,068	2,068	2,068
College preparatory only	90.0	10.0	74.8	8.5	6.8	8.9	0.3	0.7
S.E.	1.24	1.24	1.64	1.00	0.88	1.23	0.10	0.21
Unweighted n	2,574	2,574	2,574	2,574	2,574	2,574	2,574	2,574
Weighted n (in 1000s)	623	623	623	623	623	623	623	623
Vocational concentrators total*	51.8	48.2	29.0	9.3	13.5	44.8	0.8	2.6
S.E.	1.87	1.87	1.58	1.07	1.13	1.89	0.21	0.52
Unweighted n	2,152	2,152	2,152	2,152	2,152	2,152	2,152	2,152
Weighted n (in 1000s)	509	509	509	509	509	509	509	509
Vocational concentration only	45.7	54.3	22.3	9.2	14.2	50.4	0.9	3.0
S.E.	2.00	2.00	1.46	1.18	1.22	2.06	0.25	0.60
Unweighted n	1,836	1,836	1,836	1,836	1,836	1,836	1,836	1,836
Weighted n (in 1000s)	438	438	438	438	438	438	438	438
Both vocational concentration and college preparatory	89.5	10.5	70.0	10.1	9.3	10.2	0.0	0.3
S.E.	2.19	2.19	3.81	2.11	2.90	2.19	0.00	0.26
Unweighted n	316	316	316	316	316	316	316	316
Weighted n (in 1000s)	72	72	72	72	72	72	72	72
Other/general	64.6	35.4	40.4	10.1	14.2	31.2	1.5	2.8
S.E.	1.54	1.54	1.59	0.83	1.36	1.45	0.45	0.54
Unweighted n	3,811	3,811	3,811	3,811	3,811	3,811	3,811	3,811
Weighted n (in 1000s)	936	936	936	936	936	936	936	936

*Includes students who completed both a vocational concentration and a college preparatory curriculum.

NOTE: Percentages may not add to 100 due to rounding. Row n's may not add to total n's because of missing data. Estimates appearing as 0.0 or 0.00 may be nonzero but less than 0.05 or 0.005.

SOURCE: U.S. Department of Education, National Center for Education Statistics, National Education Longitudinal Study of 1988, Third Follow-up and High School Transcript Study.

Table A63—Standard errors for table 66: Percentage distribution of 1992 public high school graduates according to their postsecondary enrollment and attainment status by 1994, by curriculum specialization in high school

	Enrollment status		Attainment of all high school graduates					Attainment of those enrolled by 1994			
			No degree		Degree or certificate				Certificate or degree		
Curriculum specialization	Never enrolled	Enrolled	Never enrolled	Enrolled	Total	Certificate	Associate's degree	No degree	Total	Certificate	Associate's degree
Total	26.1	73.9	26.1	67.9	6.1	5.9	0.2	91.8	8.2	7.9	0.3
S.E.	0.97	0.97	0.97	0.99	0.44	0.44	0.04	0.59	0.59	0.59	0.06
Unweighted n	8,550	8,550	8,550	8,550	8,550	8,550	8,550	6,429	6,429	6,429	6,429
Weighted n (in 1000s)	2,070	2,070	2,070	2,070	2,070	2,070	2,070	1,531	1,531	1,531	1,531
College preparatory only	6.6	93.4	6.6	87.8	5.6	5.4	0.2	94.0	6.0	5.8	0.2
S.E.	0.91	0.91	0.91	1.22	0.87	0.87	0.06	0.93	0.93	0.93	0.07
Unweighted n	2,573	2,573	2,573	2,573	2,573	2,573	2,573	2,418	2,418	2,418	2,418
Weighted n (in 1000s)	621	621	621	621	621	621	621	580	580	580	580
Vocational concentrators total*	43.4	56.6	43.4	50.1	6.5	6.4	0.2	88.5	11.6	11.2	0.3
S.E.	1.85	1.85	1.85	1.76	0.99	0.99	0.08	1.66	1.66	1.66	0.14
Unweighted n	2,157	2,157	2,157	2,157	2,157	2,157	2,157	1,290	1,290	1,290	1,290
Weighted n (in 1000s)	511	511	511	511	511	511	511	289	289	289	289
Vocational concentration only	49.0	51.0	49.0	44.3	6.7	6.5	0.2	86.9	13.1	12.8	0.3
S.E.	1.99	1.99	1.99	1.97	1.15	1.15	0.08	2.16	2.16	2.16	0.16
Unweighted n	1,841	1,841	1,841	1,841	1,841	1,841	1,841	1,006	1,006	1,006	1,006
Weighted n (in 1000s)	439	439	439	439	439	439	439	224	224	224	224
Both vocational concentration and college preparatory	9.1	90.9	9.1	85.2	5.7	5.4	0.3	93.8	6.3	5.9	0.4
S.E.	2.10	2.10	2.10	2.53	1.40	1.38	0.28	1.55	1.55	1.52	0.31
Unweighted n	316	316	316	316	316	316	316	284	284	284	284
Weighted n (in 1000s)	72	72	72	72	72	72	72	65	65	65	65
Other/general	29.5	70.5	29.5	64.4	6.1	5.9	0.2	91.4	8.6	8.3	0.3
S.E.	1.49	1.49	1.49	1.51	0.58	0.58	0.07	0.82	0.82	0.81	0.11
Unweighted n	3,820	3,820	3,820	3,820	3,820	3,820	3,820	2,721	2,721	2,721	2,721
Weighted n (in 1000s)	938	938	938	938	938	938	938	661	661	661	661

*Includes students who completed both a vocational concentration and a college preparatory curriculum.

NOTE: Percentages may not add to 100 due to rounding. Row n's may not add to total n's because of missing data.

SOURCE: U.S. Department of Education, National Center for Education Statistics, National Education Longitudinal Study of 1988, Third Follow-up and High School Transcript Study.

Table A64—Standard errors for table 67: Percentage distribution of 1982 public high school graduates according to their postsecondary attainment by 1984, by curriculum specialization and hours worked per week in high school

Curriculum specialization and hours worked	No degree	Certificate or degree		
		Total	Certificate	Associate's degree
Total	89.9	10.1	5.0	5.1
S.E.	0.58	0.58	0.43	0.41
Unweighted n	4,234	4,234	4,234	4,234
Weighted n (in 1000s)	1,528	1,528	1,528	1,528
Curriculum specialization in high school				
College preparatory only	96.2	3.8	0.6	3.1
S.E.	0.95	0.95	0.40	0.87
Unweighted n	563	563	563	563
Weighted n (in 1000s)	192	192	192	192
Vocational concentrators total*	85.8	14.2	7.8	6.5
S.E.	1.34	1.34	0.99	0.92
Unweighted n	1,065	1,065	1,065	1,065
Weighted n (in 1000s)	406	406	406	406
Vocational concentration only	85.5	14.5	7.8	6.7
S.E.	1.37	1.37	1.01	0.94
Unweighted n	1,017	1,017	1,017	1,017
Weighted n (in 1000s)	394	394	394	394
Both vocational concentration and college preparatory	94.1	5.9	5.9	0.0
S.E.	4.35	4.35	4.35	0.00
Unweighted n	48	48	48	48
Weighted n (in 1000s)	12	12	12	12
Other/general	90.4	9.6	4.7	4.9
S.E.	0.76	0.76	0.57	0.53
Unweighted n	2,606	2,606	2,606	2,606
Weighted n (in 1000s)	930	930	930	930
Hours worked per week in high school				
None	91.1	8.9	3.5	5.4
S.E.	0.96	0.96	0.66	0.72
Unweighted n	1,353	1,353	1,353	1,353
Weighted n (in 1000s)	466	466	466	466
1–14	89.5	10.5	5.3	5.2
S.E.	1.07	1.07	0.75	0.81
Unweighted n	1,231	1,231	1,231	1,231
Weighted n (in 1000s)	459	459	459	459

Table A64—Standard errors for table 67: Percentage distribution of 1982 public high school graduates according to their postsecondary attainment by 1984, by curriculum specialization and hours worked per week in high school—Continued

Curriculum specialization and hours worked	No degree	Certificate or degree		
		Total	Certificate	Associate's degree
15–34	88.7	11.3	5.9	5.4
S.E.	1.03	1.03	0.77	0.75
Unweighted n	1,281	1,281	1,281	1,281
Weighted n (in 1000s)	464	464	464	464
35 or more	91.7	8.3	5.3	3.0
S.E.	2.30	2.30	1.73	1.49
Unweighted n	209	209	209	209
Weighted n (in 1000s)	75	75	75	75

*Includes students who completed both a vocational concentration and a college preparatory curriculum.

NOTE: Percentages may not add to 100 due to rounding. Row n's may not add to total n's because of missing data. Estimates appearing as 0.0 or 0.00 may be nonzero but less than 0.05 or 0.005.

SOURCE: U.S. Department of Education, National Center for Education Statistics, High School and Beyond Sophomore Cohort 1982 High School Transcript Study and Second Follow-up Survey.

Table A65—Standard errors for table 68: Percentage distribution of 1982 public high school graduates according to their postsecondary enrollment and attainment status by 1992, by curriculum specialization in high school

			Attainment of all high school graduates							Attainment of those enrolled				
					Certificate or degree					Certificate or degree				
	Enrollment status		No degree			Less than a bachelor's					Less than a bachelor's			
Curriculum specialization	Never enrolled	Enrolled	Never enrolled	Enrolled	Total	Total	Certificate	Associate's	Bachelor's or higher	Total	Total	Certificate	Associate's	Bachelor's or higher
Total	32.1	67.9	32.1	29.7	38.2	12.4	5.7	6.7	25.9	56.3	18.2	8.3	9.9	38.1
S.E.	0.76	0.76	0.76	0.72	0.81	0.49	0.37	0.34	0.73	0.98	0.69	0.53	0.49	0.96
Unweighted n	6,787	6,787	6,787	6,787	6,787	6,787	6,787	6,787	6,787	4,872	4,872	4,872	4,872	4,872
Weighted n (in 1000s)	2,353	2,353	2,353	2,353	2,353	2,353	2,353	2,353	2,353	1,598	1,598	1,598	1,598	1,598
College preparatory only	3.5	96.6	3.5	22.2	74.3	7.8	2.2	5.6	66.6	77.0	8.1	2.3	5.8	68.9
S.E.	0.85	0.85	0.85	2.25	2.41	1.46	0.85	1.26	2.70	2.34	1.51	0.88	1.30	2.69
Unweighted n	627	627	627	627	627	627	627	627	627	604	604	604	604	604
Weighted n (in 1000s)	196	196	196	196	196	196	196	196	196	189	189	189	189	189
Vocational concentrators total*	45.7	54.3	45.7	28.5	25.8	13.9	7.1	6.8	11.9	47.6	25.6	13.0	12.6	21.9
S.E.	1.32	1.32	1.32	1.15	1.15	0.91	0.68	0.61	0.83	1.73	1.52	1.17	1.10	1.43
Unweighted n	2,131	2,131	2,131	2,131	2,131	2,131	2,131	2,131	2,131	1,246	1,246	1,246	1,246	1,246
Weighted n (in 1000s)	793	793	793	793	793	793	793	793	793	430	430	430	430	430
Vocational concentration only	46.4	53.6	46.4	28.7	25.0	13.9	7.1	6.8	11.1	46.6	25.9	13.3	12.7	20.7
S.E.	1.33	1.33	1.33	1.17	1.15	0.92	0.69	0.62	0.82	1.77	1.55	1.20	1.12	1.44
Unweighted n	2,077	2,077	2,077	2,077	2,077	2,077	2,077	2,077	2,077	1,194	1,194	1,194	1,194	1,194
Weighted n (in 1000s)	780	780	780	780	780	780	780	780	780	418	418	418	418	418
Both vocational concentration and college preparatory	7.8	92.2	7.8	17.7	74.5	13.9	4.9	8.9	60.6	80.8	15.0	5.4	9.7	65.7
S.E.	5.26	5.26	5.26	5.79	7.66	5.89	3.50	5.07	8.54	6.33	6.33	3.77	5.48	8.11
Unweighted n	54	54	54	54	54	54	54	54	54	52	52	52	52	52
Weighted n (in 1000s)	13	13	13	13	13	13	13	13	13	12	12	12	12	12

Table A65—Standard errors for table 68: Percentage distribution of 1982 public high school graduates according to their postsecondary enrollment and attainment status by 1992, by curriculum specialization in high school—Continued

			Attainment of all high school graduates							Attainment of those enrolled				
					Certificate or degree					Certificate or degree				
	Enrollment status		No degree			Less than a bachelor's			Bachelor's or higher		Less than a bachelor's			Bachelor's or higher
Curriculum specialization	Never enrolled	Enrolled	Never enrolled	Enrolled	Total	Total	Certificate	Associate's		Total	Total	Certificate	Associate's	
Other/general	28.3	71.7	28.3	31.5	40.2	12.1	5.3	6.8	28.1	56.1	16.9	7.4	9.5	39.2
S.E.	0.93	0.93	0.93	0.95	1.02	0.61	0.45	0.45	0.95	1.21	0.83	0.62	0.63	1.19
Unweighted n	4,029	4,029	4,029	4,029	4,029	4,029	4,029	4,029	4,029	3,022	3,022	3,022	3,022	3,022
Weighted n (in 1000s)	1,364	1,364	1,364	1,364	1,364	1,364	1,364	1,364	1,364	979	979	979	979	979

*Includes students who completed both a vocational concentration and a college preparatory curriculum.

NOTE: Percentages may not add to 100 due to rounding. Row n's may not add to total n's because of missing data.

SOURCE: U.S. Department of Education, National Center for Education Statistics, High School and Beyond Sophomore Cohort 1982 High School Transcript Study and Fourth Follow-up Survey.

Table A66—Standard errors for table 69: Percentage distribution of 1982 public high school graduates who subsequently enrolled according to the timing of their first postsecondary enrollment, by curriculum specialization in high school

	Annual enrollments												
Curriculum specialization	Within 1 year	Within 1–2 years	Within 2–3 years	Within 3–4 years	Within 4–5 years	Within 5–6 years	Within 6–7 years	Within 7–8 years	Within 8–9 years	After 9 years	Within 1–3 years	Within 1–5 years	After 5 years
Total	83.1	6.0	3.1	1.7	1.3	0.9	1.0	1.2	0.7	1.0	92.2	96.1	3.9
S.E.	0.77	0.45	0.40	0.28	0.27	0.17	0.19	0.26	0.17	0.21	0.56	0.40	0.40
Unweighted n	4,205	4,205	4,205	4,205	4,205	4,205	4,205	4,205	4,205	4,205	4,205	4,205	4,205
Weighted n (in 1000s)	1,518	1,518	1,518	1,518	1,518	1,518	1,518	1,518	1,518	1,518	1,518	1,518	1,518
College preparatory only	94.3	4.3	1.0	0.2	0.0	0.0	0.1	0.0	0.1	0.0	99.6	99.9	0.2
S.E.	1.34	1.12	0.76	0.13	0.00	0.02	0.07	0.00	0.09	0.00	0.17	0.11	0.11
Unweighted n	562	562	562	562	562	562	562	562	562	562	562	562	562
Weighted n (in 1000s)	192	192	192	192	192	192	192	192	192	192	192	192	192
Vocational concentrators total*	74.4	7.6	5.2	2.9	2.3	1.6	1.0	1.9	1.8	1.4	87.2	93.9	6.1
S.E.	1.85	1.00	1.05	0.84	0.75	0.43	0.36	0.47	0.56	0.51	1.46	0.95	0.95
Unweighted n	1,059	1,059	1,059	1,059	1,059	1,059	1,059	1,059	1,059	1,059	1,059	1,059	1,059
Weighted n (in 1000s)	404	404	404	404	404	404	404	404	404	404	404	404	404
Vocational concentration only	74.0	7.7	5.4	3.0	2.4	1.6	0.9	2.0	1.8	1.4	87.0	93.9	6.1
S.E.	1.90	1.03	1.08	0.86	0.77	0.44	0.35	0.48	0.57	0.53	1.49	0.97	0.97
Unweighted n	1,011	1,011	1,011	1,011	1,011	1,011	1,011	1,011	1,011	1,011	1,011	1,011	1,011
Weighted n (in 1000s)	392	392	392	392	392	392	392	392	392	392	392	392	392
Both vocational concentration and college preparatory	88.8	5.3	0.0	0.4	0.0	1.3	4.3	0.0	0.0	0.0	94.1	95.7	4.3
S.E.	6.12	4.33	0.00	0.37	0.00	1.27	4.21	0.00	0.00	0.00	4.42	4.21	4.21
Unweighted n	48	48	48	48	48	48	48	48	48	48	48	48	48
Weighted n (in 1000s)	12	12	12	12	12	12	12	12	12	12	12	12	12
Other/general	84.5	5.7	2.6	1.6	1.1	0.9	1.1	1.1	0.4	1.1	92.8	96.4	3.7
S.E.	0.93	0.58	0.37	0.29	0.31	0.22	0.26	0.37	0.14	0.26	0.69	0.53	0.53
Unweighted n	2,584	2,584	2,584	2,584	2,584	2,584	2,584	2,584	2,584	2,584	2,584	2,584	2,584
Weighted n (in 1000s)	923	923	923	923	923	923	923	923	923	923	923	923	923

*Includes students who completed both a vocational concentration and a college preparatory curriculum.

NOTE: Within 1 year indicates the percentage of 1992 high school graduates who enrolled in their first postsecondary institution from June 1983 to May 1984. Similarly, within 1–2 years suggests that the graduates enrolled in their first institution from June 1984 to May 1985. Percentages may not add to 100 due to rounding. Row n's may not add to total n's because of missing data. Estimates appearing as 0.0 or 0.00 may be nonzero but less than 0.05 or 0.005.

SOURCE: U.S. Department of Education, National Center for Education Statistics, High School and Beyond Sophomore Cohort 1982 High School Transcript Study and Fourth Follow-up Survey.

Table A67—Standard errors for table 70: Percentage distribution of 1982 public high school vocational concentrator graduates according to their postsecondary enrollment and attainment status by 1992, by program area of high school vocational concentration

			Attainment of all high school graduates							Attainment of those enrolled				
					Certificate or degree					Certificate or degree				
	Enrollment status		No degree			Less than a bachelor's			Bach-elor's or higher		Less than a bachelor's			Bach-elor's or higher
Vocational concentration program area[1]	Never enrolled	Ever enrolled	Never enrolled	Enrolled	Total	Total	Certificate	Asso-ciate's		Total	Total	Certificate	Asso-ciate's	
Total	32.1	67.9	32.1	29.7	38.2	12.4	5.7	6.7	25.9	56.3	18.2	8.3	9.9	38.1
S.E.	0.76	0.76	0.76	0.72	0.81	0.49	0.37	0.34	0.73	0.98	0.69	0.53	0.49	0.96
Unweighted n	6,787	6,787	6,787	6,787	6,787	6,787	6,787	6,787	6,787	4,872	4,872	4,872	4,872	4,872
Weighted n (in 1000s)	2,353	2,353	2,353	2,353	2,353	2,353	2,353	2,353	2,353	1,598	1,598	1,598	1,598	1,598
No concentration	25.2	74.8	25.2	30.3	44.5	11.6	4.9	6.6	33.0	59.5	15.5	6.6	8.9	44.0
S.E.	0.85	0.85	0.85	0.90	0.99	0.56	0.41	0.42	0.96	1.12	0.74	0.54	0.56	1.16
Unweighted n	4,656	4,656	4,656	4,656	4,656	4,656	4,656	4,656	4,656	3,626	3,626	3,626	3,626	3,626
Weighted n (in 1000s)	1,560	1,560	1,560	1,560	1,560	1,560	1,560	1,560	1,560	1,168	1,168	1,168	1,168	1,168
Agriculture and renewable resources	49.4	50.6	49.4	24.7	25.9	12.2	7.3	4.9	13.7	51.2	24.1	14.4	9.7	27.1
S.E.	4.55	4.55	4.55	3.78	3.99	2.60	2.11	1.81	3.11	6.22	4.83	4.01	3.53	5.37
Unweighted n	167	167	167	167	167	167	167	167	167	86	86	86	86	86
Weighted n (in 1000s)	70	70	70	70	70	70	70	70	70	35	35	35	35	35
Business	36.3	63.8	36.3	32.0	31.7	18.3	8.1	10.1	13.5	49.8	28.6	12.7	15.9	21.1
S.E.	2.01	2.01	2.01	2.05	1.90	1.69	1.29	1.24	1.40	2.67	2.50	1.97	1.88	2.16
Unweighted n	755	755	755	755	755	755	755	755	755	504	504	504	504	504
Weighted n (in 1000s)	275	275	275	275	275	275	275	275	275	175	175	175	175	175
Marketing and distribution	36.2	63.8	36.2	40.0	23.8	6.8	1.4	5.4	17.0	37.3	10.6	2.2	8.5	26.7
S.E.	5.37	5.37	5.37	5.38	4.86	2.53	1.35	2.27	4.60	6.80	3.59	3.95	2.09	6.63
Unweighted n	111	111	111	111	111	111	111	111	111	67	67	67	67	67
Weighted n (in 1000s)	40	40	40	40	40	40	40	40	40	25	25	25	25	25
Health care	50.6	49.4	50.6	31.1	18.4	13.5	7.2	6.3	4.9	—	—	—	—	—
S.E.	9.95	9.95	9.95	8.68	6.85	5.97	4.76	3.83	3.61	—	—	—	—	—
Unweighted n	37	37	37	37	37	37	37	37	37	—	—	—	—	—
Weighted n (in 1000s)	14	14	14	14	14	14	14	14	14	—	—	—	—	—

Table A67—Standard errors for table 70: Percentage distribution of 1982 public high school vocational concentrator graduates according to their postsecondary enrollment and attainment status by 1992, by program area of high school vocational concentration—Continued

			Attainment of all high school graduates							Attainment of those enrolled				
					Certificate or degree					Certificate or degree				
	Enrollment status		No degree			Less than a bachelor's			Bachelor's		Less than a bachelor's			Bachelor's
Vocational concentration program area[1]	Never enrolled	Ever enrolled	Never enrolled	Enrolled	Total	Total	Certificate	Associate's	or higher	Total	Total	Certificate	Associate's	or higher
Public and protective services	—	—	—	—	—	—	—	—	—	—	—	—	—	—
S.E.	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Unweighted n	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Weighted n (in 1000s)	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Trade and industry	52.9	47.1	52.9	25.0	22.1	11.6	6.9	4.8	10.5	46.9	24.7	14.6	10.1	22.3
S.E.	1.94	1.94	1.94	1.71	1.60	1.24	0.91	0.84	1.24	2.84	2.46	1.86	1.75	2.46
Unweighted n	918	918	918	918	918	918	918	918	918	490	490	490	490	490
Weighted n (in 1000s)	341	341	341	341	341	341	341	341	341	161	161	161	161	161
Technology and communications	18.8	81.2	18.8	37.1	44.1	15.5	2.2	13.3	28.7	54.3	19.0	2.7	16.3	35.3
S.E.	6.94	6.94	6.94	8.28	9.44	6.38	1.59	6.24	8.91	10.00	7.63	1.96	7.49	10.19
Unweighted n	39	39	39	39	39	39	39	39	39	32	32	32	32	32
Weighted n (in 1000s)	12	12	12	12	12	12	12	12	12	10	10	10	10	10
Occupational home economics[2]	59.1	41.0	59.1	25.5	15.5	12.8	8.0	4.8	2.7	37.7	31.2	19.6	11.6	6.6
S.E.	6.02	6.02	6.02	5.33	4.09	3.77	3.20	2.09	1.67	8.67	8.24	7.29	4.92	3.99
Unweighted n	102	102	102	102	102	102	102	102	102	43	43	43	43	43
Weighted n (in 1000s)	41	41	41	41	41	41	41	41	41	17	17	17	17	17
Personal and other services	62.9	37.2	62.9	23.2	13.9	10.4	5.3	5.1	3.5	—	—	—	—	—
S.E.	6.83	6.83	6.83	6.04	4.48	3.94	3.04	2.67	2.19	—	—	—	—	—
Unweighted n	75	75	75	75	75	75	75	75	75	—	—	—	—	—
Weighted n (in 1000s)	31	31	31	31	31	31	31	31	31	—	—	—	—	—

Table A67—Standard errors for table 70: Percentage distribution of 1982 public high school vocational concentrator graduates according to their postsecondary enrollment and attainment status by 1992, by program area of high school vocational concentration—Continued

			Attainment of all high school graduates							Attainment of those enrolled				
					Certificate or degree					Certificate or degree				
	Enrollment status		No degree			Less than a bachelor's			Bachelor's		Less than a bachelor's			Bachelor's
Vocational concentration program area[1]	Never enrolled	Ever enrolled	Never enrolled	Enrolled	Total	Total	Certificate	Associate's	or higher	Total	Total	Certificate	Associate's	or higher
Food service and hospitality	—	—	—	—	—	—	—	—	—	—	—	—	—	—
S.E.	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Unweighted n	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Weighted n (in 1000s)	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Child care and education	—	—	—	—	—	—	—	—	—	—	—	—	—	—
S.E.	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Unweighted n	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Weighted n (in 1000s)	—	—	—	—	—	—	—	—	—	—	—	—	—	—

—Too few sample observations for a reliable estimate.

[1] Vocational concentrators earned 3 or more credits in a single vocational program area.

[2] Occupational home economics combines personal and other services, food service and hospitality, and child care and education.

NOTE: Percentages may not add to 100 due to rounding. Row n's may not add to total n's because of missing data.

SOURCE: U.S. Department of Education, National Center for Education Statistics, High School and Beyond Sophomore Cohort 1982 High School Transcript Study and Fourth Follow-up Survey.

Table A68—Standard errors for table 71: Percentage distribution of 1982 public high school graduates according to their postsecondary enrollment and attainment status by 1992, by selected student characteristics

			Attainment of all high school graduates							Attainment of those enrolled				
					Certificate or degree					Certificate or degree				
	Enrollment status		No degree			Less than a bachelor's			Bach-elor's or higher		Less than a bachelor's			Bach-elor's or higher
Selected student characteristics	Never enrolled	Enrolled	Never enrolled	Enrolled	Total	Total	Certi-ficate	Asso-ciate's		Total	Total	Certi-ficate	Asso-ciate's	
Total	32.1	67.9	32.1	29.7	38.2	12.4	5.7	6.7	25.9	56.3	18.2	8.3	9.9	38.1
S.E.	0.76	0.76	0.76	0.72	0.81	0.49	0.37	0.34	0.73	0.98	0.69	0.53	0.49	0.96
Unweighted n	6,787	6,787	6,787	6,787	6,787	6,787	6,787	6,787	6,787	4,872	4,872	4,872	4,872	4,872
Weighted n (in 1000s)	2,353	2,353	2,353	2,353	2,353	2,353	2,353	2,353	2,353	1,598	1,598	1,598	1,598	1,598
Hours worked per week in high school														
None	28.1	71.9	28.1	30.2	41.7	12.4	5.5	6.9	29.3	58.0	17.2	7.6	9.6	40.8
S.E.	1.31	1.31	1.31	1.35	1.38	0.87	0.66	0.63	1.26	1.67	1.19	0.91	0.87	1.59
Unweighted n	2,041	2,041	2,041	2,041	2,041	2,041	2,041	2,041	2,041	1,548	1,548	1,548	1,548	1,548
Weighted n (in 1000s)	665	665	665	665	665	665	665	665	665	478	478	478	478	478
1–14	29.0	71.0	29.0	27.4	43.6	12.4	5.9	6.5	31.2	61.5	17.5	8.3	9.2	44.0
S.E.	1.34	1.34	1.34	1.28	1.35	0.88	0.63	0.66	1.29	1.59	1.20	0.88	0.91	1.65
Unweighted n	1,899	1,899	1,899	1,899	1,899	1,899	1,899	1,899	1,899	1,416	1,416	1,416	1,416	1,416
Weighted n (in 1000s)	680	680	680	680	680	680	680	680	680	483	483	483	483	483
15–34	34.7	65.3	34.7	31.0	34.4	12.9	5.9	7.0	21.4	52.6	19.8	9.1	10.7	32.8
S.E.	1.32	1.32	1.32	1.24	1.31	0.87	0.58	0.69	1.11	1.67	1.24	0.86	1.03	1.58
Unweighted n	2,124	2,124	2,124	2,124	2,124	2,124	2,124	2,124	2,124	1,474	1,474	1,474	1,474	1,474
Weighted n (in 1000s)	744	744	744	744	744	744	744	744	744	486	486	486	486	486
35 or more	45.5	54.5	45.5	31.0	23.5	9.9	4.8	5.1	13.6	43.2	18.1	8.7	9.4	25.0
S.E.	2.81	2.81	2.81	2.59	2.37	1.57	1.13	1.17	1.95	3.74	2.72	2.02	2.10	3.34
Unweighted n	425	425	425	425	425	425	425	425	425	252	252	252	252	252
Weighted n (in 1000s)	153	153	153	153	153	153	153	153	153	83	83	83	83	83
College preparatory only	3.5	96.6	3.5	22.2	74.3	7.8	2.2	5.6	66.6	77.0	8.1	2.3	5.8	68.9
S.E.	0.85	0.85	0.85	2.25	2.41	1.46	0.85	1.26	2.70	2.34	1.51	0.88	1.30	2.69
Unweighted n	627	627	627	627	627	627	627	627	627	604	604	604	604	604
Weighted n (in 1000s)	196	196	196	196	196	196	196	196	196	189	189	189	189	189

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Table A68—Standard errors for table 71: Percentage distribution of 1982 public high school graduates according to their postsecondary enrollment and attainment status by 1992, by selected student characteristics—Continued

Selected student characteristics	Enrollment status		Attainment of all high school graduates							Attainment of those enrolled				
					Certificate or degree					Certificate or degree				
			No degree			Less than a bachelor's			Bachelor's or higher		Less than a bachelor's			Bachelor's or higher
	Never enrolled	Enrolled	Never enrolled	Enrolled	Total	Total	Certificate	Associate's		Total	Total	Certificate	Associate's	
Vocational concentrators total*	45.7	54.3	45.7	28.5	25.8	13.9	7.1	6.8	11.9	47.6	25.6	13.0	12.6	21.9
S.E.	1.32	1.32	1.32	1.15	1.15	0.91	0.68	0.61	0.83	1.73	1.52	1.17	1.10	1.43
Unweighted n	2,131	2,131	2,131	2,131	2,131	2,131	2,131	2,131	2,131	1,246	1,246	1,246	1,246	1,246
Weighted n (in 1000s)	793	793	793	793	793	793	793	793	793	430	430	430	430	430
Vocational concentration only	46.4	53.6	46.4	28.7	25.0	13.9	7.1	6.8	11.1	46.6	25.9	13.3	12.7	20.7
S.E.	1.33	1.33	1.33	1.17	1.15	0.92	0.69	0.62	0.82	1.77	1.55	1.20	1.12	1.44
Unweighted n	2,077	2,077	2,077	2,077	2,077	2,077	2,077	2,077	2,077	1,194	1,194	1,194	1,194	1,194
Weighted n (in 1000s)	780	780	780	780	780	780	780	780	780	418	418	418	418	418
Both vocational concentration and college preparatory	7.8	92.2	7.8	17.7	74.5	13.9	4.9	8.9	60.6	80.8	15.0	5.4	9.7	65.7
S.E.	5.26	5.26	5.26	5.79	7.66	5.89	3.50	5.07	8.54	6.33	6.33	3.77	5.48	8.11
Unweighted n	54	54	54	54	54	54	54	54	54	52	52	52	52	52
Weighted n (in 1000s)	13	13	13	13	13	13	13	13	13	12	12	12	12	12
Other/general	28.3	71.7	28.3	31.5	40.2	12.1	5.3	6.8	28.1	56.1	16.9	7.4	9.5	39.2
S.E.	0.93	0.93	0.93	0.95	1.02	0.61	0.45	0.45	0.95	1.21	0.83	0.62	0.63	1.19
Unweighted n	4,029	4,029	4,029	4,029	4,029	4,029	4,029	4,029	4,029	3,022	3,022	3,022	3,022	3,022
Weighted n (in 1000s)	1,364	1,364	1,364	1,364	1,364	1,364	1,364	1,364	1,364	979	979	979	979	979

*Includes students who completed both a vocational concentration and a college preparatory curriculum.

NOTE: Percentages may not add to 100 due to rounding. Row n's may not add to total n's because of missing data.

SOURCE: U.S. Department of Education, National Center for Education Statistics, High School and Beyond Sophomore Cohort 1982 High School Transcript Study and Fourth Follow-up Survey.

Table A69—Standard errors for table 72: Average number of postsecondary remedial credits earned by 1982 public high school graduates by 1992, and of those earning remedial credits, percentage distribution according to subject of remedial credits, by curriculum specialization in high school

Curriculum specialization	Total	Average number of remedial credits[1]			Percentage of total remedial credits earned[1]		
		English	Mathematics	Other	English	Mathematics	Other
Total	1.39	0.15	0.72	0.52	9.2	53.1	37.7
S.E.	0.04	0.01	0.03	0.02	0.53	1.01	1.00
Unweighted n	4,607	4,607	4,607	4,607	2,551	2,551	2,551
Weighted n (in 1000s)	1,516	1,516	1,516	1,516	823	823	823
College preparatory only	0.62	0.07	0.25	0.30	10.5	43.7	45.8
S.E.	0.06	0.01	0.03	0.04	2.18	3.75	3.89
Unweighted n	594	594	594	594	215	215	215
Weighted n (in 1000s)	185	185	185	185	63	63	63
Vocational concentrators total[2]	1.75	0.19	0.91	0.65	8.5	54.6	36.9
S.E.	0.09	0.02	0.05	0.04	0.86	1.81	1.82
Unweighted n	1,150	1,150	1,150	1,150	722	722	722
Weighted n (in 1000s)	401	401	401	401	247	247	247
Vocational concentration only	1.77	0.19	0.93	0.65	8.5	54.7	36.8
S.E.	0.09	0.02	0.05	0.04	0.86	1.82	1.83
Unweighted n	1,101	1,101	1,101	1,101	700	700	700
Weighted n (in 1000s)	389	389	389	389	242	242	242
Both vocational concentration and college preparatory	0.97	0.07	0.40	0.50	—	—	—
S.E.	0.24	0.05	0.13	0.21	—	—	—
Unweighted n	49	49	49	49	22	22	22
Weighted n (in 1000s)	12	12	12	12	—	—	—
Other/general	1.39	0.16	0.72	0.51	9.4	53.6	37.0
S.E.	0.05	0.01	0.03	0.02	0.71	1.26	1.23
Unweighted n	2,863	2,863	2,863	2,863	1,614	1,614	1,614
Weighted n (in 1000s)	929	929	929	929	513	513	513

—Too few sample observations for a reliable estimate.

[1] Averages are for all 1982 public high school graduates, while percentages are for those graduates earning postsecondary remedial credits.

[2] Includes students who completed both a vocational concentration and a college preparatory curriculum.

NOTE: Averages may not add to totals and percentages may not add to 100 due to rounding. Row n's may not add to total n's because of missing data.

SOURCE: U.S. Department of Education, National Center for Education Statistics, High School and Beyond Sophomore Cohort 1982 High School Transcript Study and Fourth Follow-up Survey.

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Table A70—Standard errors for table 73: Average number of postsecondary remedial credits earned by 1982 public high school graduates by 1992, and of those earning remedial credits, percentage distribution according to subject of remedial credits, by degree attainment by 1992

		Average number of remedial credits*			Percentage of total remedial credits earned*		
Degree attainment	Total	English	Mathematics	Other	English	Mathematics	Other
Total	1.39	0.15	0.72	0.52	9.2	53.1	37.7
S.E.	0.04	0.01	0.03	0.02	0.53	1.01	1.00
Unweighted n	4,607	4,607	4,607	4,607	2,551	2,551	2,551
Weighted n (in 1000s)	1,516	1,516	1,516	1,516	823	823	823
None	1.60	0.21	0.85	0.54	10.4	56.6	33.0
S.E.	0.07	0.02	0.04	0.03	0.81	1.48	1.38
Unweighted n	1,952	1,952	1,952	1,952	1,154	1,154	1,154
Weighted n (in 1000s)	654	654	654	654	375	375	375
Any certificate or degree	1.23	0.11	0.62	0.51	8.2	50.2	41.6
S.E.	0.05	0.01	0.03	0.02	0.69	1.32	1.28
Unweighted n	2,655	2,655	2,655	2,655	1,397	1,397	1,397
Weighted n (in 1000s)	862	862	862	862	448	448	448
Certificate	1.31	0.07	0.57	0.67	4.6	43.5	51.9
S.E.	0.14	0.02	0.08	0.08	1.31	3.51	3.67
Unweighted n	316	316	316	316	164	164	164
Weighted n (in 1000s)	119	119	119	119	61	61	61
Associate's degree	2.16	0.20	1.18	0.78	8.3	55.0	36.7
S.E.	0.12	0.03	0.09	0.06	1.23	2.40	2.44
Unweighted n	443	443	443	443	341	341	341
Weighted n (in 1000s)	146	146	146	146	111	111	111
Bachelor's degree or higher	0.99	0.09	0.49	0.41	9.0	49.8	41.3
S.E.	0.05	0.01	0.03	0.03	0.98	1.77	1.70
Unweighted n	1,896	1,896	1,896	1,896	892	892	892
Weighted n (in 1000s)	597	597	597	597	276	276	276

*Averages are for all 1982 public high school graduates, while percentages are for those graduates earning postsecondary remedial credits.

NOTE: Averages may not add to totals and percentages may not add to 100 due to rounding. Row n's may not add to total n's because of missing data.

SOURCE: U.S. Department of Education, National Center for Education Statistics, High School and Beyond Sophomore Cohort 1982 High School Transcript Study and Fourth Follow-up Survey.

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Table A71—Standard errors for table 74: Percentage distribution of 1982 public high school graduates who earned an associate's degree and/or a certificate by 1992 according to postsecondary program, by curriculum specialization in high school

	Associate's degree				Certificate			Associate's degree/certificate			
Curriculum specialization	Total	Vocational	Academic	Other	Total	Vocational	Academic	Total	Vocational	Academic	Other
Total	6.7	62.8	27.4	9.8	25.9	98.9	1.2	32.6	79.0	15.6	5.4
S.E.	0.34	2.87	2.46	1.90	0.73	0.65	0.65	0.76	1.86	1.51	1.09
Unweighted n	6,787	443	443	443	6,787	316	316	6,787	759	759	759
Weighted n (in 1000s)	2,353	146	146	146	2,353	119	119	2,353	265	265	265
College preparatory only	5.6	—	—	—	66.6	—	—	72.1	74.9	16.4	8.7
S.E.	1.26	—	—	—	2.70	—	—	2.48	7.66	6.45	5.32
Unweighted n	627	—	—	—	627	—	—	627	34	34	34
Weighted n (in 1000s)	196	—	—	—	196	—	—	196	14	14	14
Vocational concentrators total*	6.8	69.8	25.7	4.4	11.9	98.9	1.1	18.7	84.4	13.4	2.2
S.E.	0.61	4.57	4.44	1.75	0.83	1.11	1.11	1.00	2.59	2.47	0.88
Unweighted n	2,131	147	147	147	2,131	130	130	2,131	277	277	277
Weighted n (in 1000s)	793	49	49	49	793	50	50	793	99	99	99
Vocational concentration only	6.8	69.1	26.4	4.5	11.1	98.9	1.1	17.9	84.1	13.6	2.3
S.E.	0.62	4.67	4.53	1.79	0.82	1.12	1.12	0.99	2.63	2.51	0.90
Unweighted n	2,077	143	143	143	2,077	128	128	2,077	271	271	271
Weighted n (in 1000s)	780	48	48	48	780	49	49	780	97	97	97
Both vocational concentration and college preparatory	8.9	—	—	—	60.6	—	—	69.5	—	—	—
S.E.	5.07	—	—	—	8.54	—	—	7.76	—	—	—
Unweighted n	54	—	—	—	54	—	—	54	—	—	6
Weighted n (in 1000s)	13	—	—	—	13	—	—	13	—	—	—
Other/general	6.8	58.3	29.1	12.6	28.1	98.8	1.2	34.9	75.9	17.0	7.1
S.E.	0.45	3.95	3.23	2.92	0.95	0.81	0.81	0.97	2.63	2.01	1.74
Unweighted n	4,029	268	268	268	4,029	180	180	4,029	448	448	448
Weighted n (in 1000s)	1,364	86	86	86	1,364	66	66	1,364	152	152	152

—Too few sample observations for a reliable estimate.

*Includes students who completed both a vocational concentration and a college preparatory curriculum.

NOTE: Percentages may not add to totals due to rounding. Row n's may not add to total n's because of missing data.

SOURCE: U.S. Department of Education, National Center for Education Statistics, High School and Beyond Sophomore Cohort 1982 High School Transcript Study and Fourth Follow-up Survey.

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Table A72—Standard errors for table 75: Percentage distribution of 1992 public high school graduates according to their employment status in December 1993, by curriculum specialization and work experience in high school

Curriculum specialization and work experience	In labor force	Of those in labor force	
		Employed	Unemployed
Total	75.5	91.4	8.6
S.E.	0.94	0.72	0.72
Unweighted n	8,550	6,458	6,458
Weighted n (in 1000s)	2,067	1,560	1,560
Curriculum specialization in high school			
College preparatory only	63.4	91.4	8.6
S.E.	1.97	1.22	1.22
Unweighted n	2,577	1,636	1,636
Weighted n (in 1000s)	620	393	393
Vocational concentrators total*	82.8	93.3	6.7
S.E.	1.22	0.70	0.70
Unweighted n	2,155	1,790	1,790
Weighted n (in 1000s)	510	422	422
Vocational concentration only	84.4	93.0	7.0
S.E.	1.38	0.79	0.79
Unweighted n	1,839	1,563	1,563
Weighted n (in 1000s)	438	370	370
Both vocational concentration and college preparatory	73.3	95.6	4.4
S.E.	3.25	1.36	1.36
Unweighted n	316	227	227
Weighted n (in 1000s)	72	52	52
Other/general	79.5	90.2	9.8
S.E.	1.25	1.29	1.29
Unweighted n	3,818	3,032	3,032
Weighted n (in 1000s)	937	745	745
High school work experience			
None	67.0	86.0	14.0
S.E.	1.52	1.18	1.18
Unweighted n	2,434	1,616	1,616
Weighted n (in 1000s)	527	353	353
Worked part time	77.6	93.0	7.0
S.E.	1.22	1.00	1.00
Unweighted n	5,183	4,119	4,119
Weighted n (in 1000s)	1,218	945	945

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Table A72—Standard errors for table 75: Percentage distribution of 1992 public high school graduates according to their employment status in December 1993, by curriculum specialization and work experience in high school—Continued

Curriculum specialization and work experience	In labor force	Of those in labor force	
		Employed	Unemployed
Worked full time	85.8	92.0	8.0
S.E.	2.14	2.32	2.32
Unweighted n	334	277	277
Weighted n (in 1000s)	76	65	65

*Includes students who completed both a vocational concentration and a college preparatory curriculum.

NOTE: Percentages may not add to 100 due to rounding. Row n's may not add to total n's because of missing data.

SOURCE: U.S. Department of Education, National Center for Education Statistics, National Education Longitudinal Study of 1988, Third Follow-up and High School Transcript Study.

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Table A73—Standard errors for table 76: Percentage distribution of 1982 public high school graduates according to their employment status in February 1984, by curriculum specialization and hours worked per week in high school

Curriculum specialization and hours worked	Of all graduates						Percent of time in labor force	
	Employed			Unemployed	Not in labor force	In labor force	Employed	Unemployed
	Total	Full-time	Part-time					
Total	68.5	39.1	29.3	4.5	27.1	72.9	93.9	6.1
S.E.	0.71	0.77	0.72	0.32	0.66	0.66	0.44	0.44
Unweighted n	6,519	6,519	6,519	6,519	6,519	6,519	4,657	4,657
Weighted n (in 1000s)	2,260	2,260	2,260	2,260	2,260	2,260	1,648	1,648
Curriculum specialization in high school								
College preparatory only	58.2	22.3	36.0	1.0	40.8	59.2	98.3	1.7
S.E.	2.47	2.12	2.44	0.42	2.44	2.44	0.72	0.72
Unweighted n	609	609	609	609	609	609	365	365
Weighted n (in 1000s)	190	190	190	190	190	190	112	112
Vocational concentrators total*	75.1	49.8	25.2	5.4	19.5	80.5	93.3	6.7
S.E.	1.17	1.28	1.15	0.58	1.07	1.07	0.71	0.71
Unweighted n	2,049	2,049	2,049	2,049	2,049	2,049	1,613	1,613
Weighted n (in 1000s)	764	764	764	764	764	764	615	615
Vocational concentration only	75.1	50.2	24.9	5.4	19.5	80.5	93.3	6.8
S.E.	1.18	1.30	1.16	0.58	1.08	1.08	0.72	0.72
Unweighted n	1,996	1,996	1,996	1,996	1,996	1,996	1,573	1,573
Weighted n (in 1000s)	751	751	751	751	751	751	605	605
Both vocational concentration and college preparatory	76.1	31.5	44.5	3.1	20.8	79.2	96.0	4.0
S.E.	7.51	8.39	9.22	1.86	7.30	7.30	2.37	2.37
Unweighted n	53	53	53	53	53	53	40	40
Weighted n (in 1000s)	13	13	13	13	13	13	10	10
Other/general	66.1	35.3	30.8	4.4	29.5	70.5	93.7	6.3
S.E.	0.95	1.00	0.93	0.43	0.87	0.87	0.61	0.61
Unweighted n	3,861	3,861	3,861	3,861	3,861	3,861	2,679	2,679
Weighted n (in 1000s)	1,306	1,306	1,306	1,306	1,306	1,306	921	921

Table A73—Standard errors for table 76: Percentage distribution of 1982 public high school graduates according to their employment status in February 1984, by curriculum specialization and hours worked per week in high school—Continued

Curriculum specialization and hours worked	Of all graduates						Percent of time in labor force	
	Employed							
	Total	Full-time	Part-time	Unemployed	Not in labor force	In labor force	Employed	Unemployed
Hours worked per week in high school								
None	60.5	33.3	27.1	6.7	32.9	67.1	90.1	9.9
S.E.	1.37	1.29	1.20	0.77	1.28	1.28	1.13	1.13
Unweighted n	1,976	1,976	1,976	1,976	1,976	1,976	1,297	1,297
Weighted n (in 1000s)	645	645	645	645	645	645	433	433
1–14	68.8	36.4	32.4	3.5	27.7	72.3	95.2	4.8
S.E.	1.27	1.38	1.39	0.47	1.21	1.21	0.65	0.65
Unweighted n	1,835	1,835	1,835	1,835	1,835	1,835	1,280	1,280
Weighted n (in 1000s)	657	657	657	657	657	657	475	475
15–34	74.0	43.6	30.4	2.8	23.2	76.8	96.4	3.6
S.E.	1.14	1.34	1.23	0.44	1.09	1.09	0.57	0.57
Unweighted n	2,041	2,041	2,041	2,041	2,041	2,041	1,570	1,570
Weighted n (in 1000s)	718	718	718	718	718	718	551	551
35 or more	75.7	56.8	18.9	7.1	17.2	82.8	91.4	8.6
S.E.	2.50	3.06	2.38	1.57	2.06	2.06	1.89	1.89
Unweighted n	403	403	403	403	403	403	322	322
Weighted n (in 1000s)	145	145	145	145	145	145	120	120

*Includes students who completed both a vocational concentration and a college preparatory curriculum.

NOTE: Percentages may not add to totals due to rounding. Row n's may not add to total n's because of missing data.

SOURCE: U.S. Department of Education, National Center for Education Statistics, High School and Beyond Sophomore Cohort 1982 High School Transcript Study and Fourth Follow-up Survey.

Table A74—Standard errors for table 77: Percentage distribution of 1992 public high school graduates according to their employment status in December 1993, by program area of high school vocational concentration

Vocational concentration program area[1]	In labor force	Percent of time in labor force	
		Employed	Unemployed
Total	75.5	91.4	8.6
S.E.	0.94	0.72	0.72
Unweighted n	8,550	6,458	6,458
Weighted n (in 1000s)	2,067	1,560	1,560
No concentration	73.1	90.7	9.4
S.E.	1.15	0.94	0.94
Unweighted n	6,395	4,668	4,668
Weighted n (in 1000s)	1,557	1,138	1,138
Agriculture and renewable resources	82.9	90.9	9.1
S.E.	3.12	2.09	2.09
Unweighted n	221	187	187
Weighted n (in 1000s)	43	36	36
Business	81.8	94.7	5.3
S.E.	1.95	1.13	1.13
Unweighted n	678	540	540
Weighted n (in 1000s)	161	132	132
Marketing and distribution	83.3	96.5	3.5
S.E.	4.90	2.02	2.02
Unweighted n	108	90	90
Weighted n (in 1000s)	23	19	19
Health care	60.7	94.8	5.2
S.E.	15.56	2.93	2.93
Unweighted n	54	43	43
Weighted n (in 1000s)	12	8	8
Public and protective services	—	—	—
S.E.	—	—	—
Unweighted n	—	—	—
Weighted n (in 1000s)	—	—	—

Table A74—Standard errors for table 77: Percentage distribution of 1992 public high school graduates according to their employment status in December 1993, by program area of high school vocational concentration—Continued

Vocational concentration program area[1]	In labor force	Percent of time in labor force: Employed	Percent of time in labor force: Unemployed
Trade and industry	86.3	92.1	7.9
S.E.	2.09	1.28	1.28
Unweighted n	823	714	714
Weighted n (in 1000s)	204	176	176
Technology and communications	80.2	92.5	7.5
S.E.	5.14	2.88	2.88
Unweighted n	125	100	100
Weighted n (in 1000s)	28	22	22
Occupational home economics[2]	77.5	95.1	4.9
S.E.	4.46	2.06	2.06
Unweighted n	141	112	112
Weighted n (in 1000s)	37	28	28
Personal and other services	77.2	95.5	4.5
S.E.	5.30	2.29	2.29
Unweighted n	79	63	63
Weighted n (in 1000s)	21	16	16
Food service and hospitality	—	—	—
S.E.	—	—	—
Unweighted n	24	20	20
Weighted n (in 1000s)	—	—	—
Child care and education	79.0	—	—
S.E.	6.76	—	—
Unweighted n	38	29	29
Weighted n (in 1000s)	8	—	—

— Too few sample observations for a reliable estimate.

[1] Vocational concentrators earned 3 or more credits in a single vocational program area.

[2] Occupational home economics combines personal and other services, food service and hospitality, and child care and education.

NOTE: Percentages may not add to 100 due to rounding. Row n's may not add to total n's because of missing data.

SOURCE: U.S. Department of Education, National Center for Education Statistics, National Education Longitudinal Study of 1988, Third Follow-up and High School Transcript Study.

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Table A75—Standard errors for table 78: Average number and percentage distribution of months according to employment status in 1991 for 1982 public high school graduates, by curriculum specialization in high school

	Average number of months			Percent of months		
	In labor force		Not in labor force		Percent of time in labor force	
Curriculum specialization	Employed	Unemployed		In labor force	Employed	Unemployed
Total	10.43	0.52	1.05	91.3	95.2	4.8
S.E.	0.06	0.03	0.05	0.40	0.28	0.28
Unweighted n	6,701	6,701	6,701	6,701	6,321	6,321
Weighted n (in 1000s)	2,323	2,323	2,323	2,323	2,180	2,180
College preparatory only	10.56	0.37	1.07	91.1	96.7	3.4
S.E.	0.17	0.08	0.16	1.30	0.71	0.71
Unweighted n	621	621	621	621	587	587
Weighted n (in 1000s)	194	194	194	194	182	182
Vocational concentrators total*	10.51	0.52	0.96	92.0	95.3	4.8
S.E.	0.10	0.06	0.08	0.67	0.53	0.53
Unweighted n	2,105	2,105	2,105	2,105	1,979	1,979
Weighted n (in 1000s)	783	783	783	783	736	736
Vocational concentration only	10.52	0.53	0.95	92.1	95.2	4.8
S.E.	0.10	0.06	0.08	0.67	0.54	0.54
Unweighted n	2,051	2,051	2,051	2,051	1,930	1,930
Weighted n (in 1000s)	770	770	770	770	724	724
Both vocational concentration and college preparatory	9.93	0.24	1.83	84.7	97.7	2.3
S.E.	0.81	0.13	0.81	6.72	1.26	1.26
Unweighted n	54	54	54	54	49	49
Weighted n (in 1000s)	13	13	13	13	11	11
Other/general	10.37	0.54	1.09	90.9	95.0	5.0
S.E.	0.08	0.04	0.07	0.57	0.37	0.37
Unweighted n	3,975	3,975	3,975	3,975	3,755	3,755
Weighted n (in 1000s)	1,346	1,346	1,346	1,346	1,263	1,263

*Includes students who completed both a vocational concentration and a college preparatory curriculum.

NOTE: Averages and percentages may not add totals due to rounding. Row n's may not add to total n's because of missing data.

SOURCE: U.S. Department of Education, National Center for Education Statistics, High School and Beyond Sophomore Cohort 1982 High School Transcript Study and Fourth Follow-up Survey.

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Table A76—Standard errors for table 79: Average number and percentage distribution of months according to employment status in 1991 for 1982 public high school graduates, by hours worked in high school and degree attainment by 1992

Hours worked and degree attainment	Average number of months			Percent of months		
	In labor force		Not in labor force	In labor force	Percent of time in labor force	
	Employed	Unemployed			Employed	Unemployed
Total	10.43	0.52	1.05	91.3	95.2	4.8
S.E.	0.06	0.03	0.05	0.40	0.28	0.28
Unweighted n	6,701	6,701	6,701	6,701	6,321	6,321
Weighted n (in 1000s)	2,323	2,323	2,323	2,323	2,180	2,180
Hours worked per week in high school						
None	10.16	0.57	1.27	89.4	94.6	5.4
S.E.	0.12	0.06	0.11	0.88	0.58	0.58
Unweighted n	2,016	2,016	2,016	2,016	1,877	1,877
Weighted n (in 1000s)	656	656	656	656	606	606
1–14	10.37	0.55	1.09	91.0	95.0	5.0
S.E.	0.11	0.06	0.09	0.76	0.52	0.52
Unweighted n	1,872	1,872	1,872	1,872	1,754	1,754
Weighted n (in 1000s)	671	671	671	671	627	627
15–34	10.63	0.47	0.90	92.5	95.7	4.3
S.E.	0.10	0.06	0.08	0.63	0.51	0.51
Unweighted n	2,105	2,105	2,105	2,105	2,008	2,008
Weighted n (in 1000s)	737	737	737	737	698	698
35 or more	11.00	0.37	0.63	94.7	96.8	3.2
S.E.	0.18	0.11	0.15	1.23	0.97	0.97
Unweighted n	416	416	416	416	405	405
Weighted n (in 1000s)	150	150	150	150	146	146
Degree attainment by 1992						
None	10.18	0.63	1.19	90.1	94.1	5.9
S.E.	0.08	0.05	0.07	0.56	0.42	0.42
Unweighted n	3,943	3,943	3,943	3,943	3,674	3,674
Weighted n (in 1000s)	1,430	1,430	1,430	1,430	1,325	1,325

Table A76—Standard errors for table 79: Average number and percentage distribution of months according to employment status in 1991 for 1982 public high school graduates, by hours worked in high school and degree attainment by 1992—Continued

Hours worked and degree attainment	Average number of months			Percent of months		
	In labor force		Not in labor force	In labor force	Percent of time in labor force	
	Employed	Unemployed			Employed	Unemployed
Any degree or certificate	10.84	0.35	0.81	93.2	96.9	3.2
S.E.	0.07	0.04	0.06	0.51	0.33	0.33
Unweighted n	2,758	2,758	2,758	2,758	2,647	2,647
Weighted n (in 1000s)	893	893	893	893	855	855
Certificate	10.82	0.49	0.69	94.2	95.7	4.3
S.E.	0.18	0.11	0.15	1.25	0.99	0.99
Unweighted n	354	354	354	354	335	335
Weighted n (in 1000s)	131	131	131	131	125	125
Associate's degree	10.99	0.37	0.65	94.6	96.8	3.2
S.E.	0.16	0.10	0.13	1.06	0.88	0.88
Unweighted n	479	479	479	479	458	458
Weighted n (in 1000s)	157	157	157	157	151	151
Bachelor's degree or higher	10.80	0.32	0.88	92.7	97.1	2.9
S.E.	0.08	0.04	0.08	0.64	0.38	0.38
Unweighted n	1,925	1,925	1,925	1,925	1,854	1,854
Weighted n (in 1000s)	605	605	605	605	579	579

NOTE: Averages and percentages may not add to totals due to rounding. Row n's may not add to total n's because of missing data.

SOURCE: U.S. Department of Education, National Center for Education Statistics, High School and Beyond Sophomore Cohort 1982 High School Transcript Study and Fourth Follow-up Survey

Table A77—Standard errors for table 80: Percentage distribution of 1982 public high school graduates according to their employment status in December 1991, by program area of high school vocational concentration

	Of all graduates					
	In labor force			Not in labor force	Percent of time in labor force	
Vocational concentration program area[1]	Total	Employed	Unemployed		Employed	Unemployed
Total	91.2	86.5	4.7	8.8	94.8	5.2
S.E.	0.43	0.52	0.32	0.43	0.35	0.35
Unweighted n	6,701	6,701	6,701	6,701	6,154	6,154
Weighted n (in 1000s)	2,323	2,323	2,323	2,323	2,120	2,120
No concentration	91.1	86.2	4.9	8.9	94.6	5.4
S.E.	0.56	0.66	0.39	0.56	0.43	0.43
Unweighted n	4,596	4,596	4,596	4,596	4,224	4,224
Weighted n (in 1000s)	1,540	1,540	1,540	1,540	1,403	1,403
Agriculture and renewable resources	93.4	90.0	3.4	6.6	96.4	3.6
S.E.	2.06	2.45	1.54	2.06	1.65	1.65
Unweighted n	166	166	166	166	156	156
Weighted n (in 1000s)	70	70	70	70	65	65
Business	86.6	81.5	5.1	13.4	94.1	5.9
S.E.	1.56	1.77	0.91	1.56	1.0	1.05
Unweighted n	745	745	745	745	654	654
Weighted n (in 1000s)	271	271	271	271	234	234
Marketing and distribution	85.1	80.6	4.5	14.9	94.7	5.3
S.E.	4.01	5.01	2.52	4.01	3.0	3.00
Unweighted n	109	109	109	109	93	93
Weighted n (in 1000s)	39	39	39	39	33	33
Health care	88.7	70.3	18.4	11.4	79.3	20.7
S.E.	5.70	10.22	9.96	5.70	11.0	10.99
Unweighted n	37	37	37	37	32	32
Weighted n (in 1000s)	14	14	14	14	12	12
Public and protective services	—	—	—	—	—	—
S.E.	—	—	—	—	—	—
Unweighted n	—	—	—	—	—	—
Weighted n (in 1000s)	—	—	—	—	—	—

Table A77—Standard errors for table 80: Percentage distribution of 1982 public high school graduates according to their employment status in December 1991, by program area of high school vocational concentration—Continued

Vocational concentration program area[1]	Of all graduates: In labor force: Total	Of all graduates: In labor force: Employed	Of all graduates: In labor force: Unemployed	Of all graduates: Not in labor force	Percent of time in labor force: Employed	Percent of time in labor force: Unemployed
Trade and industry	96.8	93.7	3.1	3.2	96.8	3.2
S.E.	0.69	0.97	0.70	0.69	0.7	0.72
Unweighted n	908	908	908	908	876	876
Weighted n (in 1000s)	337	337	337	337	326	326
Technology and communications	98.1	93.8	4.4	1.9	95.6	4.5
S.E.	1.89	4.56	4.18	1.89	4.3	4.26
Unweighted n	38	38	38	38	37	37
Weighted n (in 1000s)	12	12	12	12	12	12
Occupational home economics[2]	82.5	75.1	7.5	17.5	91.0	9.0
S.E.	4.46	5.65	4.61	4.46	5.5	5.50
Unweighted n	100	100	100	100	80	80
Weighted n (in 1000s)	40	40	40	40	33	33
Personal and other services	79.4	71.6	7.8	20.6	90.1	9.9
S.E.	5.47	6.83	5.78	5.47	7.1	7.14
Unweighted n	74	74	74	74	57	57
Weighted n (in 1000s)	31	31	31	31	25	25
Food service and hospitality	—	—	—	—	—	—
S.E.	—	—	—	—	—	—
Unweighted n	—	—	—	—	—	—
Weighted n (in 1000s)	—	—	—	—	—	—
Child care and education	—	—	—	—	—	—
S.E.	—	—	—	—	—	—
Unweighted n	—	—	—	—	—	—
Weighted n (in 1000s)	—	—	—	—	—	—

—Too few sample observations for a reliable estimate.

[1] Vocational concentrators earned 3 or more credits in a single vocational program area.

[2] Occupational home economics combines personal and other services, food service and hospitality, and child care and education.

NOTE: Percentages may not add to 100 due to rounding. Row n's may not add to total n's because of missing data.

SOURCE: U.S. Department of Education, National Center for Education Statistics, High School and Beyond Sophomore Cohort 1982 High School Transcript Study and Fourth Follow-up Survey.

Table A78—Standard errors for table 81: Average annual and monthly earnings in 1991 for 1982 public high school graduates, by curriculum specialization in high school

Curriculum specialization	Average annual earnings[1]	Average monthly earnings[2]
Total	$22,597	$1,983
S.E.	231.64	24.55
Unweighted n	5,767	5,767
Weighted n (in 1000s)	1,984	1,984
College preparatory only	26,514	2,300
S.E.	662.09	53.02
Unweighted n	549	549
Weighted n (in 1000s)	170	170
Vocational concentrators total[3]	22,217	1,925
S.E.	424.42	36.88
Unweighted n	1,816	1,816
Weighted n (in 1000s)	672	672
Vocational concentration only	22,165	1,920
S.E.	429.35	37.36
Unweighted n	1,768	1,768
Weighted n (in 1000s)	661	661
Both vocational concentration and college preparatory	25,274	2,176
S.E.	2103.22	175.33
Unweighted n	48	48
Weighted n (in 1000s)	11	11
Other/general	22,237	1,970
S.E.	301.65	35.99
Unweighted n	3,402	3,402
Weighted n (in 1000s)	1,142	1,142

[1] Average annual earnings are for all 12 months in 1991, regardless of how many months the graduate was actually employed in 1991.

[2] Average monthly earnings includes the earnings for only those months that the graduate was employed during 1991.

[3] Includes students who completed both a vocational concentration and a college preparatory curriculum.

NOTE: Row n's may not add to total n's because of missing data.

SOURCE: U.S. Department of Education, National Center for Education Statistics, High School and Beyond Sophomore Cohort 1982 High School Transcript Study and Fourth Follow-up Survey.

Table A79—Standard errors for table 82a: Average number and percentage distribution of months according to employment status in 1991 for 1982 public high school male graduates, by curriculum specialization in high school and degree attainment by 1992

Curriculum specialization and degree attainment	Average number of months			Percent of months		
	In labor force		Not in labor force		Percent of time in labor force	
	Employed	Unemployed		In labor force	Employed	Unemployed
Total	11.28	0.31	0.41	96.6	97.3	2.7
S.E.	0.05	0.03	0.04	0.35	0.26	0.26
Unweighted n	3,208	3,208	3,208	3,208	3,142	3,142
Weighted n (in 1000s)	1,111	1,111	1,111	1,111	1,089	1,089
Curriculum specialization in high school						
College preparatory only	11.20	0.24	0.56	95.3	97.9	2.1
S.E.	0.17	0.07	0.17	1.37	0.59	0.59
Unweighted n	270	270	270	270	265	265
Weighted n (in 1000s)	84	84	84	84	82	82
Vocational concentrators total*	11.41	0.27	0.32	97.3	97.7	2.3
S.E.	0.08	0.05	0.06	0.49	0.39	0.39
Unweighted n	1,152	1,152	1,152	1,152	1,129	1,129
Weighted n (in 1000s)	432	432	432	432	424	424
Vocational concentration only	11.42	0.27	0.31	97.4	97.7	2.3
S.E.	0.08	0.05	0.06	0.49	0.39	0.39
Unweighted n	1,131	1,131	1,131	1,131	1,110	1,110
Weighted n (in 1000s)	427	427	427	427	420	420
Both vocational concentration and college preparatory	—	—	—	—	—	—
S.E.	—	—	—	—	—	—
Unweighted n	—	—	—	—	—	—
Weighted n (in 1000s)	—	—	—	—	—	—
Other/general	11.21	0.35	0.45	96.3	96.9	3.1
S.E.	0.08	0.05	0.06	0.49	0.40	0.40
Unweighted n	1,786	1,786	1,786	1,786	1,748	1,748
Weighted n (in 1000s)	594	594	594	594	583	583

Table A79—Standard errors for table 82a: Average number and percentage distribution of months according to employment status in 1991 for 1982 public high school male graduates, by curriculum specialization in high school and degree attainment by 1992—Continued

Curriculum specialization and degree attainment	Average number of months			Percent of months		
	In labor force		Not in labor force	In labor force	Percent of time in labor force	
	Employed	Unemployed			Employed	Unemployed
Degree attainment by 1992						
None	11.35	0.33	0.31	97.4	97.1	2.9
S.E.	0.07	0.04	0.05	0.40	0.35	0.35
Unweighted n	1,966	1,966	1,966	1,966	1,929	1,929
Weighted n (in 1000s)	711	711	711	711	699	699
Any degree or certificate	11.16	0.26	0.57	95.2	97.6	2.4
S.E.	0.08	0.04	0.07	0.62	0.40	0.40
Unweighted n	1,242	1,242	1,242	1,242	1,213	1,213
Weighted n (in 1000s)	400	400	400	400	390	390
Certificate	11.51	0.31	0.18	98.5	97.4	2.6
S.E.	0.15	0.12	0.08	0.65	0.99	0.99
Unweighted n	140	140	140	140	138	138
Weighted n (in 1000s)	49	49	49	49	48	48
Associate's degree	11.41	0.29	0.30	97.5	97.5	2.5
S.E.	0.18	0.13	0.12	1.02	1.08	1.08
Unweighted n	188	188	188	188	185	185
Weighted n (in 1000s)	59	59	59	59	58	58
Bachelor's degree or higher	11.05	0.25	0.70	94.2	97.7	2.3
S.E.	0.11	0.05	0.10	0.80	0.47	0.47
Unweighted n	914	914	914	914	890	890
Weighted n (in 1000s)	292	292	292	292	283	283

—Too few sample observations for a reliable estimate.

*Includes students who completed both a vocational concentration and a college preparatory curriculum.

NOTE: Averages and percentages may not add to totals due to rounding. Row n's may not add to total n's because of missing data.

SOURCE: U.S. Department of Education, National Center for Education Statistics, High School and Beyond Sophomore Cohort 1982 High School Transcript Study and Fourth Follow-up Survey.

Table A80—Standard errors for table 82b: Average number and percentage distribution of months according to employment status in 1991 for 1982 public high school female graduates, by curriculum specialization in high school and degree attainment by 1992

Curriculum specialization and degree attainment	Average number of months			Percent of months		
	In labor force		Not in labor force	In labor force	Percent of time in labor force	
	Employed	Unemployed			Employed	Unemployed
Total	9.65	0.72	1.63	86.4	93.1	6.9
S.E.	0.09	0.05	0.08	0.68	0.49	0.49
Unweighted n	3,493	3,493	3,493	3,493	3,179	3,179
Weighted n (in 1000s)	1,212	1,212	1,212	1,212	1,091	1,091
Curriculum specialization in high school						
College preparatory only	10.07	0.47	1.46	87.8	95.6	4.4
S.E.	0.26	0.13	0.24	1.98	1.22	1.22
Unweighted n	351	351	351	351	322	322
Weighted n (in 1000s)	110	110	110	110	99	99
Vocational concentrators total*	9.41	0.84	1.76	85.4	91.9	8.1
S.E.	0.18	0.12	0.15	1.29	1.13	1.13
Unweighted n	953	953	953	953	850	850
Weighted n (in 1000s)	351	351	351	351	312	312
Vocational concentration only	9.39	0.86	1.75	85.4	91.8	8.2
S.E.	0.18	0.12	0.16	1.30	1.16	1.16
Unweighted n	920	920	920	920	820	820
Weighted n (in 1000s)	343	343	343	343	305	305
Both vocational concentration and college preparatory	9.99	0.06	1.95	83.8	99.5	0.5
S.E.	1.08	0.04	1.08	8.99	0.40	0.40
Unweighted n	33	33	33	33	30	30
Weighted n (in 1000s)	8	8	8	8	7	7
Other/general	9.70	0.70	1.60	86.7	93.3	6.7
S.E.	0.11	0.06	0.11	0.88	0.59	0.59
Unweighted n	2,189	2,189	2,189	2,189	2,007	2,007
Weighted n (in 1000s)	751	751	751	751	680	680

Table A80—Standard errors for table 82b: Average number and percentage distribution of months according to employment status in 1991 for 1982 public high school female graduates, by curriculum specialization in high school and degree attainment by 1992—Continued

Curriculum specialization and degree attainment	Average number of months			Percent of months		
	In labor force		Not in labor force	In labor force	Percent of time in labor force	
	Employed	Unemployed			Employed	Unemployed
Degree attainment by 1992						
None	9.02	0.92	2.06	82.8	90.9	9.2
S.E.	0.13	0.08	0.12	0.99	0.77	0.77
Unweighted n	1,977	1,977	1,977	1,977	1,745	1,745
Weighted n (in 1000s)	719	719	719	719	626	626
Any degree or certificate	10.57	0.42	1.00	91.7	96.2	3.8
S.E.	0.11	0.06	0.09	0.78	0.50	0.50
Unweighted n	1,516	1,516	1,516	1,516	1,434	1,434
Weighted n (in 1000s)	493	493	493	493	465	465
Certificate	10.41	0.59	1.00	91.7	94.7	5.3
S.E.	0.27	0.17	0.23	1.95	1.49	1.49
Unweighted n	214	214	214	214	197	197
Weighted n (in 1000s)	82	82	82	82	77	77
Associate's degree	10.73	0.41	0.85	92.9	96.4	3.6
S.E.	0.24	0.14	0.19	1.59	1.27	1.27
Unweighted n	291	291	291	291	273	273
Weighted n (in 1000s)	98	98	98	98	92	92
Bachelor's degree or higher	10.57	0.38	1.05	91.3	96.5	3.5
S.E.	0.13	0.06	0.12	0.97	0.57	0.57
Unweighted n	1,011	1,011	1,011	1,011	964	964
Weighted n (in 1000s)	313	313	313	313	296	296

—Too few sample observations for a reliable estimate.

*Includes students who completed both a vocational concentration and a college preparatory curriculum.

NOTE: Averages and percentages may not add to totals due to rounding. Row n's may not add to total n's because of missing data.

SOURCE: U.S. Department of Education, National Center for Education Statistics, High School and Beyond Sophomore Cohort 1982 High School Transcript Study and Fourth Follow-up Survey.

Table A81—Standard errors for table 83: Average annual and monthly earnings in 1991 for 1982 public high school graduates, by sex, curriculum specialization in high school, and degree attainment by 1992

	Male		Female	
Curriculum specialization and degree attainment	Average annual earnings[1]	Average monthly earnings[2]	Average annual earnings[1]	Average monthly earnings[2]
Total	$25,494	$2,190	$19,508	$1,761
S.E.	342.60	28.43	294.44	39.83
Unweighted n	2,949	2,949	2,818	2,818
Weighted n (in 1000s)	1,024	1,024	960	960
Curriculum specialization in high school				
College preparatory only	30,198	2,622	23,278	2,017
S.E.	974.37	75.21	786.49	64.91
Unweighted n	254	254	295	295
Weighted n (in 1000s)	79	79	91	91
Vocational concentrators total[3]	25,203	2,142	17,777	1,601
S.E.	614.39	50.59	410.23	48.61
Unweighted n	1,064	1,064	752	752
Weighted n (in 1000s)	402	402	270	270
Vocational concentration only	25,181	2,139	17,606	1,589
S.E.	617.99	50.94	412.16	49.45
Unweighted n	1,045	1,045	723	723
Weighted n (in 1000s)	398	398	263	263
Both vocational concentration and college preparatory	—	—	—	—
S.E.	—	—	—	—
Unweighted n	—	—	—	—
Weighted n (in 1000s)	—	—	—	—
Other/general	25,019	2,163	19,719	1,794
S.E.	406.10	34.42	415.63	58.76
Unweighted n	1,631	1,631	1,771	1,771
Weighted n (in 1000s)	543	543	599	599
Degree attainment by 1992				
None	24,140	2,061	16,738	1,550
S.E.	450.32	37.46	373.44	63.79
Unweighted n	1,791	1,791	1,485	1,485
Weighted n (in 1000s)	652	652	531	531
Any degree or certificate	27,868	2,417	22,932	2,022
S.E.	460.76	39.48	443.60	39.88
Unweighted n	1,158	1,158	1,333	1,333
Weighted n (in 1000s)	372	372	429	429

Table A81—Standard errors for table 83: Average annual and monthly earnings in 1991 for 1982 public high school graduates, by sex, curriculum specialization in high school, and degree attainment by 1992—Continued

Curriculum specialization and degree attainment	Male		Female	
	Average annual earnings[1]	Average monthly earnings[2]	Average annual earnings[1]	Average monthly earnings[2]
Certificate	23,382	1,990	19,305	1,707
S.E.	1,184.48	97.48	1,266.19	112.43
Unweighted n	129	129	174	174
Weighted n (in 1000s)	46	46	67	67
Associate's degree	23,503	2,014	22,827	1,949
S.E.	995.01	81.44	1,283.75	106.44
Unweighted n	174	174	254	254
Weighted n (in 1000s)	55	55	85	85
Bachelor's degree or higher	29,506	2,571	23,841	2,121
S.E.	556.39	48.06	491.58	46.66
Unweighted n	855	855	905	905
Weighted n (in 1000s)	271	271	277	277

—Too few sample observations for a reliable estimate.

[1] Average annual earnings are for all 12 months in 1991, regardless of how many months the graduate was actually employed in 1991.

[2] Average monthly earnings includes the earnings for only those months that the graduate was employed during 1991.

[3] Includes students who completed both a vocational concentration and a college preparatory curriculum.

NOTE: Row n's may not add to total n's because of missing data.

SOURCE: U.S. Department of Education, National Center for Education Statistics, High School and Beyond Sophomore Cohort 1982 High School Transcript Study and Fourth Follow-up Survey.

Table A82—Standard errors for table 84: Average annual and monthly earnings in 1991 for 1982 public high school graduates, by hours worked in high school and degree attainment by 1992

Hours worked and degree attainment	Average annual earnings[1]	Average monthly earnings[2]
Total	$22,597	$1,983
S.E.	231.64	24.55
Unweighted n	5,767	5,767
Weighted n (in 1000s)	1,984	1,984
Hours worked per week in high school		
None	21,559	1,922
S.E.	364.83	36.43
Unweighted n	1,713	1,713
Weighted n (in 1000s)	548	548
1–14	22,088	1,917
S.E.	381.79	32.31
Unweighted n	1,581	1,581
Weighted n (in 1000s)	564	564
15–34	23,408	2,060
S.E.	394.31	53.92
Unweighted n	1,855	1,855
Weighted n (in 1000s)	646	646
35 or more	23,557	2,015
S.E.	825.64	67.34
Unweighted n	371	371
Weighted n (in 1000s)	133	133
Degree attainment by 1992		
None	20,819	1,832
S.E.	305.71	35.29
Unweighted n	3,276	3,276
Weighted n (in 1000s)	1,183	1,183
Any degree or certificate	25,223	2,206
S.E.	329.02	28.73
Unweighted n	2,491	2,491
Weighted n (in 1000s)	801	801
Certificate	20,959	1,822
S.E.	901.91	78.11
Unweighted n	303	303
Weighted n (in 1000s)	113	113

Table A82—Standard errors for table 84: Average annual and monthly earnings in 1991 for 1982 public high school graduates, by hours worked in high school and degree attainment by 1992 —Continued

Hours worked and degree attainment	Average annual earnings[1]	Average monthly earnings[2]
Associate's degree	23,092	1,974
S.E.	878.18	72.76
Unweighted n	428	428
Weighted n (in 1000s)	140	140
Bachelor's degree or higher	26,643	2,344
S.E.	385.74	34.35
Unweighted n	1,760	1,760
Weighted n (in 1000s)	549	549

[1] Average annual earnings are for all 12 months in 1991, regardless of how many months the graduate was actually employed in 1991.

[2] Average monthly earnings includes the earnings for only those months that the graduate was employed during 1991.

NOTE: Row n's may not add to total n's because of missing data.

SOURCE: U.S. Department of Education, National Center for Education Statistics, High School and Beyond Sophomore Cohort 1982 High School Transcript Study and Fourth Follow-up Survey.

Table A83—Standard errors for table 85: Percentage distribution and number of adults aged 18 or older according to highest educational attainment: 1992 and 1996

	Of all adults 18 or older				Of those who completed a degree*				
					Associate's				
	Less than high school	High school only	Some college, no degree*	College degree*	Total	Vocational	Academic	Bachelor's	Master's or higher
					1992				
Total percentage of adults	19.4	35.3	18.8	26.5	24.2	13.5	10.7	50.8	25.0
S.E.	0.15	0.18	0.14	0.16	0.31	0.25	0.22	0.36	0.31
Unweighted n	105,896	105,896	105,896	105,896	28,299	28,299	28,299	28,299	28,299
Weighted n (in 1000s)	185,471	185,471	185,471	185,471	49,060	49,060	49,060	49,060	49,060
Total number of adults (in 1000s)	36,043	65,505	34,863	49,060	11,864	6,628	5,235	24,932	12,265
S.E. (in 1000s)	271	328	268	302	168	127	113	234	170
Unweighted n	20,033	37,969	19,595	28,299	6,853	3,929	2,924	14,325	7,121
Weighted n (in 1000s)	36,043	65,505	34,863	49,060	11,864	6,628	5,235	24,932	12,265
					1996				
Total percentage of adults	17.6	33.8	19.8	28.9	24.1	12.5	11.6	52.0	23.9
S.E.	0.14	0.17	0.14	0.16	0.29	0.22	0.22	0.34	0.29
Unweighted n	89,406	89,406	89,406	89,406	25,997	25,997	25,997	25,997	25,997
Weighted n (in 1000s)	193,486	193,486	193,486	193,486	55,815	55,815	55,815	55,815	55,815
Total number of adults (in 1000s)	34,089	65,349	38,233	55,815	13,431	6,977	6,455	29,036	13,347
S.E. (in 1000s)	267	331	279	317	178	130	126	250	177
Unweighted n	15,387	30,571	17,451	25,997	6,304	3,373	2,931	13,465	6,228
Weighted n (in 1000s)	34,089	65,349	38,233	55,815	13,431	6,977	6,455	29,036	13,347

*The surveys did not ask specifically about postsecondary certificate completion. It is, therefore, not possible to know whether adults completing a postsecondary certificate, but not an associate's or higher degree, include themselves in the "some college, no degree" or "college degree" category.

NOTE: Percentages may not add to 100 due to rounding. Row n's may not add to total n's because of missing data.

SOURCE: U.S. Department of Commerce, Bureau of the Census, October Current Population Surveys, 1992 and 1996.

Table A84—Standard errors for table 86: Percentage distribution of adults aged 18 or older according to highest educational attainment, by sex and race–ethnicity: 1996

	Of all adults 18 or older				Of those who completed a degree[1]				
					Associate's				
Sex and race–ethnicity	Less than high school	High school only[1]	Some college, no degree[1]	College degree[1]	Total	Vocational	Academic	Bachelor's	Master's or higher
Total	17.6	33.8	19.8	28.9	6.9	3.6	3.3	15.0	6.9
S.E.	0.14	0.17	0.14	0.16	0.09	0.07	0.06	0.13	0.09
Unweighted n	89,406	89,406	89,406	89,406	89,406	89,406	89,406	89,406	89,406
Weighted n (in 1000s)	193,486	193,486	193,486	193,486	193,486	193,486	193,486	193,486	193,486
Sex									
Male	17.5	32.6	19.6	30.2	6.2	3.2	3.0	15.8	8.3
S.E.	0.20	0.25	0.21	0.24	0.13	0.09	0.09	0.19	0.14
Unweighted n	41,870	41,870	41,870	41,870	41,870	41,870	41,870	41,870	41,870
Weighted n (in 1000s)	92,539	92,539	92,539	92,539	92,539	92,539	92,539	92,539	92,539
Female	17.7	34.9	19.9	27.6	7.6	4.0	3.7	14.3	5.6
S.E.	0.19	0.24	0.20	0.22	0.13	0.10	0.09	0.18	0.12
Unweighted n	47,536	47,536	47,536	47,536	47,536	47,536	47,536	47,536	47,536
Weighted n (in 1000s)	100,947	100,947	100,947	100,947	100,947	100,947	100,947	100,947	100,947
Race–ethnicity[2]									
Black, non-Hispanic	23.8	36.2	21.5	18.5	5.5	2.6	2.9	9.1	3.8
S.E.	0.53	0.60	0.51	0.49	0.29	0.20	0.21	0.36	0.24
Unweighted n	8,458	8,458	8,458	8,458	8,458	8,458	8,458	8,458	8,458
Weighted n (in 1000s)	21,921	21,921	21,921	21,921	21,921	21,921	21,921	21,921	21,921
Hispanic	43.8	28.0	14.5	13.6	4.4	2.3	2.1	6.7	2.6
S.E.	0.88	0.80	0.62	0.61	0.36	0.27	0.25	0.44	0.28
Unweighted n	7,057	7,057	7,057	7,057	7,057	7,057	7,057	7,057	7,057
Weighted n (in 1000s)	18,426	18,426	18,426	18,426	18,426	18,426	18,426	18,426	18,426
White, non-Hispanic	13.5	34.6	20.2	31.7	7.5	4.0	3.5	16.6	7.7
S.E.	0.14	0.20	0.17	0.19	0.11	0.08	0.08	0.16	0.11
Unweighted n	69,741	69,741	69,741	69,741	69,741	69,741	69,741	69,741	69,741
Weighted n (in 1000s)	145,136	145,136	145,136	145,136	145,136	145,136	145,136	145,136	145,136

[1] The surveys did not ask specifically about postsecondary certificate completion. It is, therefore, not possible to know whether adults completing a postsecondary certificate, but not an associate's or higher degree, include themselves in the "some college, no degree" or "college degree" category.

[2] Non-Hispanic adults who are neither black nor white are included in the total row but not shown separately.

NOTE: Percentages may not add to 100 due to rounding. Row n's may not add to total n's because of missing data.

SOURCE: U.S. Department of Commerce, Bureau of the Census, October Current Population Survey, 1996.

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Table A85—Standard errors for table 87: Percentage distribution of adults aged 18 or older according to postsecondary enrollment and degree-seeking status, by sex and race–ethnicity: 1991 and 1994

		Of those enrolled						
			Working toward a degree					
					Associate's			
Sex and race–ethnicity	Enrolled in post-secondary	Not working toward a degree	Total	License, diploma, or certificate	Total	Vocational	Academic	Bachelor's or higher
				1991				
Total	7.6	6.4	93.6	4.9	22.3	13.8	8.5	66.4
S.E.	0.10	0.34	0.34	0.30	0.58	0.48	0.39	0.66
Unweighted n	107,758	7,528	7,528	7,528	7,528	7,528	7,528	7,528
Weighted n (in 1000s)	183,687	12,845	12,845	12,845	12,845	12,845	12,845	12,845
Sex								
Male	7.3	5.6	94.4	4.0	20.9	12.6	8.3	69.5
S.E.	0.14	0.48	0.48	0.41	0.84	0.69	0.57	0.95
Unweighted n	50,201	3,380	3,380	3,380	3,380	3,380	3,380	3,380
Weighted n (in 1000s)	87,458	5,925	5,925	5,925	5,925	5,925	5,925	5,925
Female	7.8	7.1	92.9	5.8	23.4	14.7	8.7	63.7
S.E.	0.14	0.49	0.49	0.45	0.81	0.68	0.54	0.92
Unweighted n	57,557	4,148	4,148	4,148	4,148	4,148	4,148	4,148
Weighted n (in 1000s)	96,229	6,920	6,920	6,920	6,920	6,920	6,920	6,920
Race–ethnicity*								
Black, non-Hispanic	7.0	5.2	94.8	7.1	30.3	21.4	9.0	57.4
S.E.	0.33	1.16	1.16	1.34	2.39	2.13	1.49	2.57
Unweighted n	10,279	646	646	646	646	646	646	646
Weighted n (in 1000s)	20,357	1,265	1,265	1,265	1,265	1,265	1,265	1,265
Hispanic	5.8	8.3	91.7	5.5	30.8	18.6	12.2	55.4
S.E.	0.47	2.41	2.41	1.99	4.04	3.40	2.86	4.35
Unweighted n	7,198	407	407	407	407	407	407	407
Weighted n (in 1000s)	14,258	754	754	754	754	754	754	754
White, non-Hispanic	7.6	6.4	93.6	4.7	20.9	12.9	8.1	68.0
S.E.	0.11	0.39	0.39	0.34	0.65	0.53	0.43	0.74
Unweighted n	86,007	5,956	5,956	5,956	5,956	5,956	5,956	5,956
Weighted n (in 1000s)	143,039	10,049	10,049	10,049	10,049	10,049	10,049	10,049
				1994				
Total	7.8	5.8	94.2	4.2	21.7	10.5	11.2	68.3
S.E.	0.10	0.32	0.32	0.28	0.57	0.42	0.43	0.64
Unweighted n	101,629	6,966	6,966	6,966	6,966	6,966	6,966	6,966
Weighted n (in 1000s)	190,123	13,523	13,523	13,523	13,523	13,523	13,523	13,523

Table A85—Standard errors for table 87: Percentage distribution of adults aged 18 or older according to postsecondary enrollment and degree-seeking status, by sex and race–ethnicity: 1991 and 1994 —Continued

Sex and race–ethnicity	Enrolled in post-secondary	Of those enrolled						
		Not working toward a degree	Working toward a degree					
			Total	License, diploma, or certificate	Associate's			Bachelor's or higher
					Total	Vocational	Academic	
Sex								
Male	7.4	5.2	94.8	3.5	19.3	8.7	10.6	72.1
S.E.	0.14	0.46	0.46	0.38	0.81	0.58	0.63	0.92
Unweighted n	47,489	3,020	3,020	3,020	3,020	3,020	3,020	3,020
Weighted n (in 1000s)	90,925	6,068	6,068	6,068	6,068	6,068	6,068	6,068
Female	8.2	6.3	93.7	4.8	23.7	12.0	11.7	65.2
S.E.	0.14	0.45	0.45	0.40	0.79	0.60	0.60	0.88
Unweighted n	54,140	3,946	3,946	3,946	3,946	3,946	3,946	3,946
Weighted n (in 1000s)	99,198	7,455	7,455	7,455	7,455	7,455	7,455	7,455
Race–ethnicity*								
Black, non-Hispanic	8.1	6.8	93.2	4.8	23.4	14.4	9.0	65.0
S.E.	0.35	1.22	1.22	1.03	2.05	1.70	1.38	2.31
Unweighted n	9,952	656	656	656	656	656	656	656
Weighted n (in 1000s)	21,481	1,488	1,488	1,488	1,488	1,488	1,488	1,488
Hispanic	6.8	8.3	91.7	5.1	32.1	13.0	19.1	54.5
S.E.	0.49	2.19	2.19	1.75	3.71	2.67	3.13	3.96
Unweighted n	7,274	428	428	428	428	428	428	428
Weighted n (in 1000s)	17,404	1,026	1,026	1,026	1,026	1,026	1,026	1,026
White, non-Hispanic	7.6	5.4	94.6	4.2	20.7	9.9	10.7	69.7
S.E.	0.11	0.36	0.36	0.32	0.64	0.47	0.49	0.73
Unweighted n	79,802	5,365	5,365	5,365	5,365	5,365	5,365	5,365
Weighted n (in 1000s)	144,954	10,239	10,239	10,239	10,239	10,239	10,239	10,239

*Non-Hispanic adults who are neither black nor white are included in the total row but not shown separately.

NOTE: Percentages may not add to 100 due to rounding. Row n's may not add to total n's because of missing data.

SOURCE: U.S. Department of Commerce, Bureau of the Census, October Current Population Surveys, 1991 and 1994.

Table A86—Standard errors for table 88: Percentage distribution of subbaccalaureate students majoring in an academic, vocational, or unreported field, by sex: 1989–90 and 1995–96

Sex	1989–90			1995–96		
	Academic	Vocational	Major not reported	Academic	Vocational	Major not reported
Total	21.8	54.3	23.9	22.6	49.2	28.2
S.E.	0.99	1.27	1.45	1.29	1.43	1.52
Unweighted n	21,329	21,329	21,329	16,932	16,932	16,932
Weighted n (in 1000s)	10,165	10,165	10,165	9,725	9,725	9,725
Male	21.7	54.7	23.6	19.8	49.2	31.1
S.E.	1.13	1.38	1.45	1.56	1.80	1.87
Unweighted n	8,107	8,107	8,107	6,760	6,760	6,760
Weighted n (in 1000s)	4,157	4,157	4,157	4,053	4,053	4,053
Female	23.1	51.9	25.0	24.5	49.3	26.2
S.E.	1.15	1.40	1.72	1.38	1.48	1.53
Unweighted n	11,998	11,998	11,998	10,172	10,172	10,172
Weighted n (in 1000s)	5,517	5,517	5,517	5,672	5,672	5,672

NOTE: Percentages may not add to 100 due to rounding. Row n's may not add to total n's because of missing data.

SOURCE: U.S. Department of Education, National Center for Education Statistics, 1989–90 and 1995–96 National Postsecondary Student Aid Study.

Table A87—Standard errors for table 89: Percentage distribution of subbaccalaureate students who had previously earned various degrees, by type of previous degree and selected student enrollment characteristics: 1995–96

	Of all subbaccalaureate students			Of previous degree holders	
Selected student enrollment characteristics	Any previous degree	Baccalaureate degree or higher	Subbaccalaureate degree	Baccalaureate degree or higher	Subbaccalaureate degree
Total	20.4	2.2	18.3	10.7	89.3
S.E.	0.77	0.23	0.73	1.07	1.07
Unweighted n	10,814	10,814	10,814	2,020	2,020
Weighted n (in 1000s)	6,072	6,072	6,072	1,241	1,241
Institution type					
Public 4-year	28.7	14.4	14.2	50.3	49.7
S.E.	2.89	2.54	1.84	5.84	5.84
Unweighted n	1,107	1,107	1,107	206	206
Weighted n (in 1000s)	317	317	317	91	91
Private, not-for-profit 4-year	27.1	9.6	17.5	35.5	64.5
S.E.	3.34	2.33	2.42	6.44	6.44
Unweighted n	664	664	664	127	127
Weighted n (in 1000s)	152	152	152	41	41
Public 2-year	19.3	1.4	17.9	7.2	92.8
S.E.	0.93	0.24	0.88	1.17	1.17
Unweighted n	3,954	3,954	3,954	639	639
Weighted n (in 1000s)	4,789	4,789	4,789	923	923
Public vocational–technical	36.0	0.7	35.2	2.0	98.0
S.E.	3.57	0.45	3.64	1.28	1.28
Unweighted n	610	610	610	191	191
Weighted n (in 1000s)	117	117	117	42	42
Private, not-for-profit less-than-4-year	23.0	1.0	22.0	4.4	95.6
S.E.	3.19	0.41	3.28	1.98	1.98
Unweighted n	1,335	1,335	1,335	272	272
Weighted n (in 1000s)	144	144	144	33	33
Private, for-profit	20.0	0.6	19.4	3.0	97.0
S.E.	1.40	0.20	1.37	0.98	0.98
Unweighted n	3,144	3,144	3,144	585	585
Weighted n (in 1000s)	554	554	554	111	111

Table A87—Standard errors for table 89: Percentage distribution of subbaccalaureate students who had previously earned various degrees, by type of previous degree and selected student enrollment characteristics: 1995–96—Continued

	Of all subbaccalaureate students			Of previous degree holders	
Selected student enrollment characteristics	Any previous degree	Baccalaureate degree or higher	Subbaccalaureate degree	Baccalaureate degree or higher	Subbaccalaureate degree
Major field category					
Vocational	22.6	1.2	21.4	5.4	94.6
S.E.	1.00	0.29	0.97	1.27	1.27
Unweighted n	6,939	6,939	6,939	1,415	1,415
Weighted n (in 1000s)	3,049	3,049	3,049	690	690
Academic	17.1	2.0	15.1	11.9	88.1
S.E.	1.51	0.36	1.49	2.18	2.18
Unweighted n	1,949	1,949	1,949	306	306
Weighted n (in 1000s)	1,447	1,447	1,447	248	248
Major not reported	19.3	4.2	15.1	21.7	78.3
S.E.	1.84	0.59	1.60	2.80	2.80
Unweighted n	1,926	1,926	1,926	299	299
Weighted n (in 1000s)	1,576	1,576	1,576	304	304
Degree pursuing					
Certificate	29.7	3.4	26.3	11.5	88.5
S.E.	1.48	0.52	1.41	1.72	1.72
Unweighted n	4,375	4,375	4,375	1,073	1,073
Weighted n (in 1000s)	1,374	1,374	1,374	409	409
Associate's	16.7	1.1	15.7	6.4	93.6
S.E.	0.81	0.22	0.79	1.25	1.25
Unweighted n	5,818	5,818	5,818	820	820
Weighted n (in 1000s)	4,277	4,277	4,277	716	716
Nondegree program	27.7	9.4	18.2	34.0	66.0
S.E.	3.52	1.96	3.42	6.98	6.98
Unweighted n	621	621	621	127	127
Weighted n (in 1000s)	421	421	421	117	117

NOTE: Percentages may not add to 100 due to rounding.

SOURCE: U.S. Department of Education, National Center for Education Statistics, 1995–96 National Postsecondary Student Aid Study.

Table A88—Standard errors for table 90: Percentage distribution of subbaccalaureate students according to type of institution, by major field category: 1989–90 and 1995–96

Major field category	Public 4-year	Private, not-for-profit 4-year	Public 2-year	Private, not-for-profit less-than-4-year	Public vocational–technical	Private, for-profit
			1989–90			
Total	10.1	4.6	67.1	2.6	2.3	13.2
S.E.	0.96	0.41	1.59	0.29	0.54	1.00
Unweighted n	21,329	21,329	21,329	21,329	21,329	21,329
Weighted n (in 1000s)	10,165	10,165	10,165	10,165	10,165	10,165
Vocational	7.0	3.6	59.7	3.4	3.8	22.5
S.E.	0.98	0.47	1.96	0.43	0.86	1.60
Unweighted n	14,070	14,070	14,070	14,070	14,070	14,070
Weighted n (in 1000s)	5,517	5,517	5,517	5,517	5,517	5,517
Academic	14.1	5.9	73.2	2.4	0.7	3.7
S.E.	1.53	0.92	2.10	0.56	0.30	0.91
Unweighted n	3,788	3,788	3,788	3,788	3,788	3,788
Weighted n (in 1000s)	2,222	2,222	2,222	2,222	2,222	2,222
Major not reported	13.5	5.9	78.3	1.1	0.2	1.0
S.E.	1.70	0.79	2.20	0.28	0.07	0.23
Unweighted n	3,471	3,471	3,471	3,471	3,471	3,471
Weighted n (in 1000s)	2,426	2,426	2,426	2,426	2,426	2,426
			1995–96			
Total	5.4	2.9	78.5	2.3	2.1	8.8
S.E.	0.50	0.40	0.92	0.32	0.40	0.54
Unweighted n	16,932	16,932	16,932	16,932	16,932	16,932
Weighted n (in 1000s)	9,725	9,725	9,725	9,725	9,725	9,725
Vocational	3.4	2.0	71.0	3.5	4.0	16.1
S.E.	0.54	0.39	1.56	0.61	0.63	1.12
Unweighted n	10,672	10,672	10,672	10,672	10 672	10,672
Weighted n (in 1000s)	4,789	4,789	4,789	4,789	4,789	4,789
Academic	6.2	3.9	86.3	1.4	0.4	1.8
S.E.	0.84	0.80	1.38	0.41	0.09	0.54
Unweighted n	2,925	2,925	2,925	2,925	2,925	2,925
Weighted n (in 1000s)	2,193	2,193	2,193	2,193	2,193	2,193
Major not reported	8.2	3.6	85.3	0.8	0.3	1.7
S.E.	0.85	0.60	1.33	0.27	0.22	0.68
Unweighted n	3,335	3,335	3,335	3,335	3,335	3,335
Weighted n (in 1000s)	2,744	2,744	2,744	2,744	2,744	2,744

NOTE: Percentages may not add to 100 due to rounding.

SOURCE: U.S. Department of Education, National Center for Education Statistics, 1989–90 and 1995–96 National Postsecondary Student Aid Study.

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Table A89—Standard errors for table 91: Percentage distribution of subbaccalaureate students according to sex, by major field category: 1995–96

Major field category	Male	Female
Total	41.7	58.3
S.E.	0.80	0.80
Unweighted n	16,932	16,932
Weighted n (in 1000s)	9,725	9,725
Vocational	41.6	58.4
S.E.	1.21	1.21
Unweighted n	10,672	10,672
Weighted n (in 1000s)	4,789	4,789
Academic	36.5	63.5
S.E.	1.67	1.67
Unweighted n	2,925	2,925
Weighted n (in 1000s)	2,193	2,193
Major not reported	45.9	54.1
S.E.	1.43	1.43
Unweighted n	3,335	3,335
Weighted n (in 1000s)	2,744	2,744

SOURCE: U.S. Department of Education, National Center for Education Statistics, 1995–96 National Postsecondary Student Aid Study.

Table A90—Standard errors for table 92: Percentage distribution of subbaccalaureate students majoring in an academic, vocational, or unreported field, by race–ethnicity: 1989–90 and 1995–96

	1989–90			1995–96		
Race–ethnicity	Academic	Vocational	Major not reported	Academic	Vocational	Major not reported
Total	21.8	54.3	23.9	22.6	49.2	28.2
S.E.	0.99	1.27	1.45	1.29	1.43	1.52
Unweighted n	21,329	21,329	21,329	16,932	16,932	16,932
Weighted n (in 1000s)	10,165	10,165	10,165	9,725	9,725	9,725
American Indian/Alaska Native	22.4	52.5	25.1	25.2	44.1	30.7
S.E.	5.04	5.25	5.24	5.91	6.47	6.60
Unweighted n	196	196	196	232	232	232
Weighted n (in 1000s)	96	96	96	114	114	114
Asian/Pacific Islander	20.6	49.9	29.6	26.1	44.6	29.2
S.E.	3.09	3.53	3.57	3.62	3.86	3.97
Unweighted n	747	747	747	877	877	877
Weighted n (in 1000s)	467	467	467	479	479	479
Black, non-Hispanic	15.4	67.7	16.9	21.2	57.7	21.2
S.E.	1.55	2.44	1.97	2.21	2.45	1.88
Unweighted n	3,026	3,026	3,026	2,611	2,611	2,611
Weighted n (in 1000s)	1,162	1,162	1,162	1,312	1,312	1,312
Hispanic	20.7	55.8	23.5	21.2	48.4	30.3
S.E.	2.30	2.77	2.41	2.22	3.29	3.21
Unweighted n	2,197	2,197	2,197	2,232	2,232	2,232
Weighted n (in 1000s)	961	961	961	1,156	1,156	1,156
Other	—	—	—	14.1	57.3	28.6
S.E.	—	—	—	4.60	8.12	8.55
Unweighted n	—	—	—	126	126	126
Weighted n (in 1000s)	—	—	—	49	49	49
White, non-Hispanic	23.1	52.3	24.6	22.8	48.1	29.1
S.E.	1.09	1.40	1.70	1.61	1.62	1.67
Unweighted n	15,163	15,163	15,163	10,854	10,854	10,854
Weighted n (in 1000s)	7,478	7,478	7,478	6,614	6,614	6,614

—Data not available.

NOTE: Percentages may not add to 100 due to rounding.

SOURCE: U.S. Department of Education, National Center for Education Statistics, 1989–90 and 1995–96 National Postsecondary Student Aid Study.

Table A91—Standard errors for table 93: Percentage distribution of subbaccalaureate students majoring in an academic, vocational, or unreported field, by disability status: 1989–90 and 1995–96

	1989–90			1995–96		
Disability status	Academic	Vocational	Major not reported	Academic	Vocational	Major not reported
Total	21.9	54.3	23.9	22.6	49.2	28.2
S.E.	0.99	1.27	1.45	1.29	1.43	1.52
Unweighted n	21,329	21,329	21,329	16,932	16,932	16,932
Weighted n (in 1000s)	10,165	10,165	10,165	9,725	9,725	9,725
Has disability	22.3	51.8	25.9	23.7	49.0	27.3
S.E.	1.65	2.49	2.52	3.22	3.50	3.37
Unweighted n	1,460	1,460	1,460	753	753	753
Weighted n (in 1000s)	768	768	768	422	422	422
No disability	22.6	52.7	24.7	24.1	50.3	25.7
S.E.	1.12	1.31	1.55	1.49	1.65	1.66
Unweighted n	10,569	10,569	10,569	9,701	9,701	9,701
Weighted n (in 1000s)	5,543	5,543	5,543	5,450	5,450	5,450
Disability status not reported	20.7	57.0	22.3	20.3	47.8	31.9
S.E.	1.19	1.50	1.52	1.41	1.61	1.80
Unweighted n	9,300	9,300	9,300	6,478	6,478	6,478
Weighted n (in 1000s)	3,854	3,854	3,854	3,853	3,853	3,853

NOTE: Percentages may not add to 100 due to rounding.

SOURCE: U.S. Department of Education, National Center for Education Statistics, 1989–90 and 1995–96 National Postsecondary Student Aid Study.

Table A92—Standard errors for table 94: Percentage distribution of subbaccalaureate students according to their postsecondary grade point average (GPA), by major field category: 1989–90 and 1995–96

	GPA in 1989–90				GPA in 1995–96			
Major field category	3.5 or more	2.6–3.49	1.6–2.59	1.59 or less	3.5 or more	2.6–3.49	1.6–2.59	1.59 or less
Total	27.9	31.5	27.7	13.0	23.3	35.0	23.7	18.0
S.E.	0.78	0.58	0.66	0.70	0.83	0.82	0.81	0.69
Unweighted n	14,632	14,632	14,632	14,632	13,253	13,253	13,253	13,253
Weighted n (in 1000s)	7,653	7,653	7,653	7,653	8,577	8,577	8,577	8,577
Vocational	27.6	32.1	28.1	12.2	23.7	38.9	22.9	14.5
S.E.	0.99	0.80	0.93	0.80	1.00	1.01	1.01	0.80
Unweighted n	9,069	9,069	9,069	9,069	7,676	7,676	7,676	7,676
Weighted n (in 1000s)	4,028	4,028	4,028	4,028	4,028	4,028	4,028	4,028
Academic	27.7	32.6	28.2	11.4	20.2	35.4	29.4	15.0
S.E.	1.18	1.23	1.35	0.96	1.26	1.74	1.40	1.12
Unweighted n	2,930	2,930	2,930	2,930	2,577	2,577	2,577	2,577
Weighted n (in 1000s)	1,784	1,784	1,784	1,784	2,078	2,078	2,078	2,078
Major not reported	28.5	29.0	26.3	16.2	25.2	28.2	20.2	26.4
S.E.	1.39	1.15	1.23	1.33	1.50	1.41	1.36	1.39
Unweighted n	2,633	2,633	2,633	2,633	3,000	3,000	3,000	3,000
Weighted n (in 1000s)	1,841	1,841	1,841	1,841	2,471	2,471	2,471	2,471

NOTE: Percentages may not add to 100 due to rounding.

SOURCE: U.S. Department of Education, National Center for Education Statistics, 1989–90 and 1995–96 National Postsecondary Student Aid Study.

Table A93—Standard errors for table 95: Percentage distribution of subbaccalaureate students majoring in an academic, vocational, or unreported field, by age: 1989–90 and 1995–96

	1989–90			1995–96		
Age	Academic	Vocational	Major not reported	Academic	Vocational	Major not reported
Total	21.9	54.3	23.9	22.6	49.2	28.2
S.E.	0.99	1.27	1.45	1.29	1.43	1.52
Unweighted n	21,329	21,329	21,329	16,932	16,932	16,932
Weighted n (in 1000s)	10,165	10,165	10,165	9,725	9,725	9,725
20 years or younger	24.4	51.5	24.0	28.8	44.4	26.9
S.E.	1.41	1.34	1.52	2.01	1.80	1.81
Unweighted n	6,815	6,815	6,815	5,492	5,492	5,492
Weighted n (in 1000s)	3,017	3,017	3,017	2,642	2,642	2,642
21–23 years	24.6	54.2	21.2	26.9	49.9	23.2
S.E.	1.61	1.73	1.51	2.03	2.21	2.17
Unweighted n	3,619	3,619	3,619	2,853	2,853	2,853
Weighted n (in 1000s)	1,636	1,636	1,636	1,629	1,629	1,629
24–29 years	20.4	56.6	23.0	21.0	53.7	25.3
S.E.	1.32	1.65	1.57	1.78	2.13	1.95
Unweighted n	3,836	3,836	3,836	3,331	3,331	3,331
Weighted n (in 1000s)	1,840	1,840	1,840	2,008	2,008	2,008
30 years or older	20.7	52.0	27.3	16.6	50.1	33.3
S.E.	1.19	2.01	2.38	1.35	1.92	2.07
Unweighted n	6,002	6,002	6,002	5,256	5,256	5,256
Weighted n (in 1000s)	3,283	3,283	3,283	3,445	3,445	3,445

NOTE: Percentages may not add to 100 due to rounding. Row n's may not add to total n's because of missing data.

SOURCE: U.S. Department of Education, National Center for Education Statistics, 1989–90 and 1995–96 National Postsecondary Student Aid Study.

Table A94—Standard errors for table 96: Percentage distribution of subbaccalaureate students according to age, by major field category: 1989–90 and 1995–96

	1989–90				1995–96			
Major field category	20 years or younger	21–23 years	24–29 years	30 years or older	20 years or younger	21–23 years	24–29 years	30 years or older
Total	30.9	16.7	18.8	33.6	27.2	16.8	20.6	35.4
S.E.	0.81	0.49	0.47	0.94	0.88	0.60	0.64	0.97
Unweighted n	20,272	20,272	20,272	20,272	16,932	16,932	16,932	16,932
Weighted n (in 1000s)	9,776	9,776	9,776	9,776	9,725	9,725	9,725	9,725
Vocational	30.0	17.1	20.1	32.9	24.5	17.0	22.5	36.0
S.E.	0.93	0.57	0.62	1.00	0.97	0.81	0.82	1.20
Unweighted n	13,163	13,163	13,163	13,163	10,672	10,672	10,672	10,672
Weighted n (in 1000s)	5,189	5,189	5,189	5,189	4,789	4,789	4,789	4,789
Academic	33.5	18.3	17.1	31.0	34.7	20.0	19.2	26.1
S.E.	1.31	1.08	0.93	1.40	1.79	1.33	1.49	1.60
Unweighted n	3,725	3,725	3,725	3,725	2,925	2,925	2,925	2,925
Weighted n (in 1000s)	2,196	2,196	2,196	2,196	2,193	2,193	2,193	2,193
Major not reported	30.3	14.5	17.7	37.5	25.9	13.8	18.5	41.8
S.E.	1.83	0.89	0.84	2.19	1.50	1.01	1.23	1.90
Unweighted n	3,384	3,384	3,384	3,384	3,335	3,335	3,335	3,335
Weighted n (in 1000s)	2,392	2,392	2,392	2,392	2,744	2,744	2,744	2,744

NOTE: Percentages may not add to 100 due to rounding.

SOURCE: U.S. Department of Education, National Center for Education Statistics, 1989–90 and 1995–96 National Postsecondary Student Aid Study.

Table A95—Standard errors for table 97: Percentage distribution of subbaccalaureate students according to their financial aid status, by major field category: 1989–90 and 1995–96

Major field category	1989–90 Received aid	1989–90 No aid	1995–96 Received aid	1995–96 No aid
Total	38.1	61.9	40.7	59.3
S.E.	1.09	1.09	1.10	1.10
Unweighted n	21,329	21,329	16,932	16,932
Weighted n (in 1000s)	10,165	10,165	9,725	9,725
Vocational	46.3	53.7	49.8	50.2
S.E.	1.33	1.33	1.42	1.42
Unweighted n	14,070	14,070	10,672	10,672
Weighted n (in 1000s)	5,517	5,517	4,789	4,789
Academic	31.6	68.4	39.3	60.7
S.E.	1.57	1.57	1.87	1.87
Unweighted n	3,788	3,788	2,925	2,925
Weighted n (in 1000s)	2,222	2,222	2,193	2,193
Major not reported	25.5	74.5	25.8	74.2
S.E.	1.38	1.38	1.62	1.62
Unweighted n	3,471	3,471	3,335	3,335
Weighted n (in 1000s)	2,426	2,426	2,744	2,744

NOTE: Percentages may not add to 100 due to rounding.

SOURCE: U.S. Department of Education, National Center for Education Statistics, 1989–90 and 1995–96 National Postsecondary Student Aid Study.

Table A96—Standard errors for table 98: Percentage distribution of subbaccalaureate students according to their dependency and marital status, by major field category: 1989–90 and 1995–96

Major field category	1989–90						1995–96					
	Dependency status		Marital status*				Dependency status		Marital status*			
	Dependent	Independent	Not married, no dependents	Not married, with dependents	Married, no dependents	Married, with dependents	Dependent	Independent	Not married, no dependents	Not married, with dependents	Married, no dependents	Married, with dependents
Total	36.8	63.2	57.6	7.4	13.9	21.2	37.5	62.5	57.0	16.9	10.8	15.3
S.E.	0.97	0.97	0.96	0.37	0.42	0.67	1.00	1.00	1.02	0.71	0.60	0.68
Unweighted n	21,222	21,222	16,459	16,459	16,459	16,459	16,932	16,932	16,932	16,932	16,932	16,932
Weighted n (in 1000s)	10,120	10,120	8,639	8,639	8,639	8,639	9,725	9,725	9,725	9,725	9,725	9,725
Vocational	34.0	66.0	54.8	9.1	14.4	21.6	33.5	66.5	52.2	20.0	10.9	16.9
S.E.	1.01	1.01	1.07	0.46	0.56	0.81	1.09	1.09	1.20	0.95	0.72	0.82
Unweighted n	14,008	14,008	10,402	10,402	10,402	10,402	10,672	10,672	10,672	10,672	10,672	10,672
Weighted n (in 1000s)	5,491	5,491	4,516	4,516	4,516	4,516	4,789	4,789	4,789	4,789	4,789	4,789
Academic	42.9	57.1	63.7	5.0	11.8	19.5	47.9	52.1	66.0	14.3	8.6	11.1
S.E.	1.50	1.50	1.40	0.55	0.74	1.08	2.09	2.09	1.80	1.32	1.05	0.96
Unweighted n	3,772	3,772	3,118	3,118	3,118	3,118	2,925	2,925	2,925	2,925	2,925	2,925
Weighted n (in 1000s)	2,214	2,214	1,959	1,959	1,959	1,959	2,193	2,193	2,193	2,193	2,193	2,193
Major not reported	37.3	62.7	57.7	5.9	14.7	21.7	36.1	63.9	58.2	13.7	12.4	15.7
S.E.	2.16	2.16	2.00	0.73	0.77	1.42	1.69	1.69	1.70	0.99	1.00	1.39
Unweighted n	3,442	3,442	2,939	2,939	2,939	2,939	3,335	3,335	3,335	3,335	3,335	3,335
Weighted n (in 1000s)	2,415	2,415	2,164	2,164	2,164	2,164	2,744	2,744	2,744	2,744	2,744	2,744

*The data in the "Marital status" columns for 1989–90 and 1995–96 are not directly comparable due to missing data in 1989–90 on this variable (about 23 percent missing) and no missing data in 1995–96.

NOTE: Percentages may not add to 100 due to rounding.

SOURCE: U.S. Department of Education, National Center for Education Statistics, 1989–90 and 1995–96 National Postsecondary Student Aid Study.

Table A97—Standard errors for table 99: Percentage distribution of subbaccalaureate students majoring in an academic, vocational, or unreported field, by parental education: 1995–96

Parental education	Academic	Vocational	Major not reported
Total	22.6	49.2	28.2
S.E.	1.29	1.43	1.52
Unweighted n	16,932	16,932	16,932
Weighted n (in 1000s)	9,725	9,725	9,725
Less than high school	21.5	50.8	27.6
S.E.	3.00	3.27	3.47
Unweighted n	1,170	1,170	1,170
Weighted n (in 1000s)	663	663	663
High school completion	20.5	58.8	20.7
S.E.	1.58	1.96	1.75
Unweighted n	5,298	5,298	5,298
Weighted n (in 1000s)	2,615	2,615	2,615
Some trade/vocational	27.4	42.7	29.9
S.E.	3.49	4.39	3.80
Unweighted n	443	443	443
Weighted n (in 1000s)	287	287	287
Some college	26.7	51.8	21.5
S.E.	2.59	2.83	2.59
Unweighted n	1,158	1,158	1,158
Weighted n (in 1000s)	713	713	713
Bachelor's degree	28.6	44.5	26.9
S.E.	2.67	2.70	2.44
Unweighted n	1,456	1,456	1,456
Weighted n (in 1000s)	889	889	889
Graduate degree	35.3	35.2	29.5
S.E.	3.79	3.32	3.07
Unweighted n	879	879	879
Weighted n (in 1000s)	537	537	537
Not reported	19.9	45.7	34.3
S.E.	1.42	1.56	1.86
Unweighted n	6,528	6,528	6,528
Weighted n (in 1000s)	4,021	4,021	4,021

NOTE: Percentages may not add to 100 due to rounding. Row n's may not add to total n's because of missing data.

SOURCE: U.S. Department of Education, National Center for Education Statistics, 1995–96 National Postsecondary Student Aid Study.

Table A98—Standard errors for table 100: Percentage distribution of subbaccalaureate students according to vocational major subcategory, by sex: 1989–90 and 1995–96

Sex	Any vocational major	Agri-culture	Business and office	Marketing and distri-bution	Health	Home economics	Technical education				Trade and industry	Other vocational
							Total	Protective services	Computers data processing	Engineering/ science tech-nologies		
						1989–90						
Total	54.3	0.4	17.1	1.1	10.6	2.2	14.3	2.2	3.8	8.3	2.5	6.1
S.E.	1.27	0.07	0.68	0.18	0.58	0.20	0.67	0.26	0.33	0.52	0.29	0.45
Unweighted n	21,329	21,329	21,329	21,329	21,329	21,329	21,329	21,329	21,329	21,329	21,329	21,329
Weighted n (in 1000s)	10,165	10,165	10,165	10,165	10,165	10,165	10,165	10,165	10,165	10,165	10,165	10,165
Male	54.7	0.6	14.6	0.9	5.1	1.4	24.4	3.8	4.0	16.6	5.1	2.7
S.E.	1.38	0.13	0.70	0.16	0.42	0.21	1.11	0.55	0.43	0.96	0.59	0.28
Unweighted n	8,107	8,107	8,107	8,107	8,107	8,107	8,107	8,107	8,107	8,107	8,107	8,107
Weighted n (in 1000s)	4,157	4,157	4,157	4,157	4,157	4,157	4,157	4,157	4,157	4,157	4,157	4,157
Female	51.9	0.3	18.4	1.2	14.5	3.0	6.4	0.9	3.5	2.0	0.4	7.8
S.E.	1.45	0.06	0.83	0.19	0.78	0.31	0.46	0.15	0.37	0.23	0.09	0.56
Unweighted n	11,998	11,998	11,998	11,998	11,998	11,998	11,998	11,998	11,998	11,998	11,998	11,998
Weighted n (in 1000s)	5,517	5,517	5,517	5,517	5,517	5,517	5,517	5,517	5,517	5,517	5,517	5,517
						1995–96						
Total	49.2	0.7	14.1	0.5	10.9	1.8	11.6	2.8	2.7	6.1	3.1	6.6
S.E.	1.43	0.21	0.64	0.12	0.71	0.27	0.67	0.27	0.28	0.59	0.39	0.54
Unweighted n	16,932	16,932	16,932	16,932	16,932	16,932	16,932	16,932	16,932	16,932	16,932	16,932
Weighted n (in 1000s)	9,725	9,725	9,725	9,725	9,725	9,725	9,725	9,725	9,725	9,725	9,725	9,725
Male	49.2	0.9	11.5	0.3	4.1	1.7	20.8	5.0	3.7	12.1	7.0	2.8
S.E.	1.80	0.32	0.82	0.10	0.50	0.39	1.28	0.57	0.45	1.20	0.86	0.38
Unweighted n	6,760	6,760	6,760	6,760	6,760	6,760	6,760	6,760	6,760	6,760	6,760	6,760
Weighted n (in 1000s)	4,053	4,053	4,053	4,053	4,053	4,053	4,053	4,053	4,053	4,053	4,053	4,053
Female	49.3	0.5	15.9	0.6	15.8	1.9	4.9	1.1	2.1	1.7	0.4	9.2
S.E.	1.48	0.18	0.87	0.17	0.99	0.34	0.40	0.20	0.26	0.24	0.12	0.76
Unweighted n	10,172	10,172	10,172	10,172	10,172	10,172	10,172	10,172	10,172	10,172	10,172	10,172
Weighted n (in 1000s)	5,672	5,672	5,672	5,672	5,672	5,672	5,672	5,672	5,672	5,672	5,672	5,672

NOTE: Percentages may not add to 100 due to rounding. Row n's may not add to total n's because of missing data.

SOURCE: U.S. Department of Education, National Center for Education Statistics, 1989–90 and 1995–96 National Postsecondary Student Aid Study.

Table A99—Standard errors for table 101: Percentage of subbaccalaureate students who worked while enrolled and, of those who worked, percentage distribution according to average hours worked per week, by major field category: 1989–90 and 1995–96

Major field category	Worked for pay	Hours worked per week: Fewer than 20	Hours worked per week: 20–34	Hours worked per week: 35 or more
		1989–90		
Total	79.7	—	—	—
S.E.	0.60	—	—	—
Unweighted n	16,736	—	—	—
Weighted n (in 1000s)	8,871	—	—	—
Vocational	79.0	—	—	—
S.E.	0.62	—	—	—
Unweighted n	10,549	—	—	—
Weighted n (in 1000s)	4,623	—	—	—
Academic	80.1	—	—	—
S.E.	1.07	—	—	—
Unweighted n	3,172	—	—	—
Weighted n (in 1000s)	2,004	—	—	—
Major not reported	80.9	—	—	—
S.E.	1.14	—	—	—
Unweighted n	3,015	—	—	—
Weighted n (in 1000s)	2,244	—	—	—
		1995–96		
Total	80.6	11.6	30.9	57.5
S.E.	0.92	0.81	1.29	1.41
Unweighted n	10,365	7,377	7,377	7,377
Weighted n (in 1000s)	9,259	7,466	7,466	7,466
Vocational	77.3	10.8	30.1	59.1
S.E.	1.34	0.91	1.59	1.82
Unweighted n	6,652	4,497	4,497	4,497
Weighted n (in 1000s)	4,613	3,564	3,564	3,564
Academic	82.3	15.8	37.1	47.1
S.E.	1.67	2.16	2.34	2.70
Unweighted n	1,867	1,427	1,427	1,427
Weighted n (in 1000s)	2,142	1,762	1,762	1,762
Major not reported	85.4	9.5	27.0	63.5
S.E.	1.43	1.55	2.70	3.08
Unweighted n	1,846	1,453	1,453	1,453
Weighted n (in 1000s)	2,505	2,140	2,140	2,140

—Data not available.

NOTE: Percentages may not add to 100 due to rounding.

SOURCE: U.S. Department of Education, National Center for Education Statistics, 1989–90 and 1995–96 National Postsecondary Student Aid Study.

Table A100—Standard errors for table 102: Percentage of subbaccalaureate students participating in various school-related work experience programs, by major field category: 1995–96

Major field category	Any school-related work experience program	Internship	Apprenticeship	Cooperative education
Total	8.3	4.4	2.2	2.3
S.E.	0.84	0.52	0.59	0.38
Unweighted n	7,566	7,295	6,950	6,956
Weighted n (in 1000s)	7,191	6,895	6,743	6,747
Vocational	9.5	4.5	3.3	2.4
S.E.	1.16	0.59	1.04	0.40
Unweighted n	4,719	4,522	4,296	4,271
Weighted n (in 1000s)	3,597	3,409	3,367	3,333
Academic	10.0	6.9	1.6	2.0
S.E.	2.00	1.61	0.97	0.69
Unweighted n	1,454	1,417	1,340	1,351
Weighted n (in 1000s)	1,740	1,683	1,591	1,598
Major not reported	4.4	1.6	0.6	2.3
S.E.	0.94	0.33	0.30	0.81
Unweighted n	1,393	1,356	1,314	1,334
Weighted n (in 1000s)	1,854	1,803	1,785	1,816

NOTE: Row n's may not add to total n's because of missing data.

SOURCE: U.S. Department of Education, National Center for Education Statistics, 1995–96 National Postsecondary Student Aid Study.

Table A101—Standard errors for table 103: Percentage of 1989–90 beginning postsecondary students not enrolled in February 1994 who reported various links between their postsecondary education and their most recent principal job, and who had at least one job related to their studies, by major field category and degrees attained: 1994

Major field category and degrees attained	Apply skills from school	Use tools/ equipment trained on at school	Needed education to get job	First job after postsecondary education different from last job during postsecondary education	Had at least one job while enrolled that was related to studies
Total	76.8	84.9	57.0	31.9	13.1
S.E.	1.62	1.43	1.88	1.09	0.77
Unweighted n	1,677	1,679	1,676	3,960	3,993
Weighted n (in 1000s)	605	606	605	1,485	1,502
Most recent major					
Academic	71.1	84.0	61.8	31.0	16.5
S.E.	3.53	3.10	3.84	2.29	1.44
Unweighted n	372	373	373	1,165	1,170
Weighted n (in 1000s)	99	99	99	371	376
Vocational	77.6	85.2	58.2	30.1	13.3
S.E.	2.02	1.71	2.35	1.44	0.97
Unweighted n	1,128	1,129	1,127	2,273	2,292
Weighted n (in 1000s)	426	426	426	877	887
Types of degrees attained 1989–94					
None	69.6	75.8	38.6	30.7	5.9
S.E.	3.27	2.83	3.55	1.66	0.85
Unweighted n	441	441	441	1,456	1,470
Weighted n (in 1000s)	246	246	246	745	756
Certificate	85.4	92.8	68.5	40.2	9.2
S.E.	4.09	2.19	4.17	3.12	1.47
Unweighted n	398	398	397	732	735
Weighted n (in 1000s)	124	124	124	238	241
Associate's	90.5	95.2	71.7	24.2	20.4
S.E.	2.69	1.99	5.20	3.37	3.50
Unweighted n	181	181	181	314	315
Weighted n (in 1000s)	80	80	80	141	142
Bachelor's	72.7	87.6	70.7	32.9	29.8
S.E.	2.46	1.86	2.34	1.74	1.60
Unweighted n	609	611	609	1,341	1,353
Weighted n (in 1000s)	131	132	131	309	311

NOTE: Row n's may not add to total n's because of missing data.

SOURCE: U.S. Department of Education, National Center for Education Statistics, 1989–90 Beginning Postsecondary Students Longitudinal Study, Second Follow-up, 1994.

Table A102—Standard errors for table 104: Percentage distribution of 1989–90 beginning postsecondary students who were enrolled in 1994 according to their February 1994 employment status and of those employed, type of primary occupation in 1993, by selected student and institutional characteristics

	Employment status in Feb. 1994		Primary occupation in 1993					
Selected student and institutional characteristics	Not employed	Employed	Clerical	Services/ sales	Managerial/ computer	Professional	Craft/repair/labor/ machining	Other
Total	34.7	65.3	27.2	26.4	19.8	10.2	11.1	5.4
S.E.	1.51	1.51	1.52	1.47	1.45	0.99	1.17	0.89
Unweighted n	1,990	1,990	1,705	1,705	1,705	1,705	1,705	1,705
Weighted n (in 1000s)	798	798	675	675	675	675	675	675
Most recent major								
Academic	37.2	62.8	30.7	30.8	14.5	9.8	9.1	5.2
S.E.	2.34	2.34	2.40	2.36	1.74	1.20	1.70	1.10
Unweighted n	909	909	781	781	781	781	781	781
Weighted n (in 1000s)	321	321	278	278	278	278	278	278
Vocational	32.6	67.4	25.4	22.7	24.4	9.8	13.2	4.5
S.E.	1.99	1.99	2.11	2.07	2.15	1.40	1.78	1.11
Unweighted n	969	969	842	842	842	842	842	842
Weighted n (in 1000s)	418	418	356	356	356	356	356	356
Level of institution in 1989–90								
4-year	35.9	64.1	26.8	27.2	17.9	13.0	9.1	6.0
S.E.	1.54	1.54	1.44	1.45	1.23	1.16	1.01	1.06
Unweighted n	1,595	1,595	1,382	1,382	1,382	1,382	1,382	1,382
Weighted n (in 1000s)	456	456	392	392	392	392	392	392
Less-than-4-year	33.2	66.8	27.7	25.4	22.4	6.2	13.8	4.5
S.E.	2.88	2.88	3.12	2.88	2.91	1.72	2.43	1.51
Unweighted n	395	395	323	323	323	323	323	323
Weighted n (in 1000s)	342	342	283	283	283	283	283	283
Control of institution in 1989–90								
Public	34.1	65.9	26.6	27.4	20.5	9.0	11.0	5.6
S.E.	1.80	1.80	1.83	1.77	1.75	1.18	1.40	1.08
Unweighted n	1,024	1,024	873	873	873	873	873	873
Weighted n (in 1000s)	651	651	549	549	549	549	549	549
Private, not-for-profit	37.8	62.2	29.9	23.5	17.1	15.7	8.8	5.0
S.E.	2.13	2.13	1.74	1.54	1.41	1.35	1.28	0.87
Unweighted n	887	887	773	773	773	773	773	773
Weighted n (in 1000s)	129	129	113	113	113	113	113	113
Private, for-profit	34.4	65.6	26.0	14.2	16.1	12.4	31.4	0.0
S.E.	6.90	6.90	6.21	4.39	5.84	4.94	9.03	0.00
Unweighted n	79	79	59	59	59	59	59	59
Weighted n (in 1000s)	18	18	14	14	14	14	14	14

Table A102—Standard errors for table 104: Percentage distribution of 1989–90 beginning postsecondary students who were enrolled in 1994 according to their February 1994 employment status and of those employed, type of primary occupation in 1993, by selected student and institutional characteristics—Continued

	Employment status in Feb. 1994		Primary occupation in 1993					
Selected student and institutional characteristics	Not employed	Employed	Clerical	Services/ sales	Managerial/ computer	Professional	Craft/repair/labor/ machining	Other
Primary occupation in 1990								
Clerical	19.8	80.2	60.9	7.8	20.8	5.2	3.9	1.4
S.E.	5.36	5.36	7.81	2.57	7.43	2.20	3.00	1.44
Unweighted n	99	99	87	87	87	87	87	87
Weighted n (in 1000s)	45	45	40	40	40	40	40	40
Services/sales	19.8	80.2	31.0	44.2	11.9	3.6	4.5	4.9
S.E.	4.98	4.98	6.61	7.39	5.15	1.54	3.10	3.32
Unweighted n	120	120	109	109	109	109	109	109
Weighted n (in 1000s)	54	54	50	50	50	50	50	50
Managerial/computer	24.2	75.8	26.4	15.2	30.0	9.3	6.2	13.0
S.E.	8.78	8.78	9.26	7.11	8.63	6.98	4.26	7.71
Unweighted n	63	63	61	61	61	61	61	61
Weighted n (in 1000s)	40	40	38	38	38	38	38	38
Professional	—	—	—	—	—	—	—	—
S.E.	—	—	—	—	—	—	—	—
Unweighted n	—	—	—	—	—	—	—	—
Weighted n (in 1000s)	—	—	—	—	—	—	—	—
Craft/repair/labor/machining	36.8	63.3	8.4	20.1	9.0	7.4	47.6	7.6
S.E.	8.87	8.87	3.42	8.06	3.74	4.10	10.10	4.92
Unweighted n	64	64	58	58	58	58	58	58
Weighted n (in 1000s)	30	30	27	27	27	27	27	27
Other	—	—	—	—	—	—	—	—
S.E.	—	—	—	—	—	—	—	—
Unweighted n	—	—	—	—	—	—	—	—
Weighted n (in 1000s)	—	—	—	—	—	—	—	—

—Too few sample observations for a reliable estimate.

NOTE: Percentages may not add to 100 due to rounding. Row n's may not add to total n's because of missing data. Estimates appearing as 0.0 or 0.00 may be nonzero but less than 0.05 or 0.005.

SOURCE: U.S. Department of Education, National Center for Education Statistics, 1989–90 Beginning Postsecondary Students Longitudinal Study, Second Follow-up, 1994.

Table A103—Standard errors for table 105: Percentage distribution of 1989–90 beginning postsecondary students according to their educational aspirations, by major field category and degree goal in 1989–90

	Highest level of education ever expected to complete			
Major field category and degree goal	Trade school, including credential	Some college, associate's degree	Bachelor's degree	Graduate/ professional degree
Total	9.1	12.8	35.9	42.1
S.E.	0.62	0.81	1.07	1.04
Unweighted n	6,407	6,407	6,407	6,407
Weighted n (in 1000s)	2,454	2,454	2,454	2,454
Major in 1989–90				
Academic	1.3	7.3	33.5	57.9
S.E.	0.52	1.23	1.68	1.81
Unweighted n	2,050	2,050	2,050	2,050
Weighted n (in 1000s)	703	703	703	703
Vocational	12.2	15.0	36.0	36.9
S.E.	1.00	1.13	1.40	1.38
Unweighted n	3,041	3,041	3,041	3,041
Weighted n (in 1000s)	1,185	1,185	1,185	1,185
Degree working toward in 1989–90				
Certificate/license	42.4	23.8	21.8	12.0
S.E.	3.01	2.64	2.42	1.88
Unweighted n	852	852	852	852
Weighted n (in 1000s)	266	266	266	266
Associate's total	5.3	22.7	42.5	29.5
S.E.	0.92	1.98	2.34	2.01
Unweighted n	814	814	814	814
Weighted n (in 1000s)	552	552	552	552
Academic associate's	3.4	16.1	47.2	33.3
S.E.	1.94	3.36	4.34	4.00
Unweighted n	220	220	220	220
Weighted n (in 1000s)	165	165	165	165
Vocational associate's	6.1	25.6	40.5	27.9
S.E.	1.07	2.38	2.55	2.27
Unweighted n	594	594	594	594
Weighted n (in 1000s)	387	387	387	387
Bachelor's	0.6	1.2	35.0	63.2
S.E.	0.24	0.32	1.30	1.29
Unweighted n	3,350	3,350	3,350	3,350
Weighted n (in 1000s)	1,006	1,006	1,006	1,006
No credential	9.5	44.9	26.8	18.8
S.E.	4.35	7.34	7.55	6.15
Unweighted n	63	63	63	63
Weighted n (in 1000s)	58	58	58	58

NOTE: Percentages may not add to 100 due to rounding. Row n's may not add to total n's because of missing data.

SOURCE: U.S. Department of Education, National Center for Education Statistics, 1989–90 Beginning Postsecondary Students Longitudinal Study, Second Follow-up, 1994.

Table A104—Standard errors for table 106: Percentage distribution of 1989–90 beginning postsecondary students according to their enrollment and attainment status in spring 1994, by selected student characteristics

Selected student characteristics	Not enrolled in spring 1994			Enrolled in spring 1994		
	Total	No degree	Attained degree	Total	No degree	Attained degree
Total	73.6	36.8	36.8	26.4	13.2	13.2
S.E.	0.97	1.08	1.02	0.97	0.74	0.66
Unweighted n	6,011	6,011	6,011	6,011	6,011	6,011
Weighted n (in 1000s)	2,290	2,290	2,290	2,290	2,290	2,290
Major in 1989–90						
Academic	65.3	24.3	41.1	34.7	16.7	18.0
S.E.	1.96	1.59	1.67	1.96	1.63	1.34
Unweighted n	2,093	2,093	2,093	2,093	2,093	2,093
Weighted n (in 1000s)	724	724	724	724	724	724
Vocational	75.8	36.0	39.7	24.2	12.4	11.9
S.E.	1.26	1.54	1.46	1.26	0.95	0.88
Unweighted n	3,135	3,135	3,135	3,135	3,135	3,135
Weighted n (in 1000s)	1,228	1,228	1,228	1,228	1,228	1,228
Degree working toward in 1989–90						
Certificate/license	89.6	31.7	57.9	10.4	4.1	6.4
S.E.	1.78	2.68	2.90	1.78	1.33	1.37
Unweighted n	912	912	912	912	912	912
Weighted n (in 1000s)	288	288	288	288	288	288
Associate's total	73.7	40.7	33.0	26.3	12.9	13.4
S.E.	2.25	2.42	2.36	2.25	1.82	1.67
Unweighted n	839	839	839	839	839	839
Weighted n (in 1000s)	566	566	566	566	566	566
Academic associate's	63.8	30.6	33.2	36.2	12.6	23.6
S.E.	4.62	4.29	4.17	4.62	3.52	3.82
Unweighted n	227	227	227	227	227	227
Weighted n (in 1000s)	168	168	168	168	168	168
Vocational associate's	77.9	45.0	32.9	22.1	13.1	9.1
S.E.	2.46	2.78	2.70	2.46	2.17	1.54
Unweighted n	612	612	612	612	612	612
Weighted n (in 1000s)	398	398	398	398	398	398
Bachelor's	65.1	23.7	41.4	34.9	17.4	17.5
S.E.	1.26	1.21	1.38	1.26	1.01	0.92
Unweighted n	3,395	3,395	3,395	3,395	3,395	3,395
Weighted n (in 1000s)	1,025	1,025	1,025	1,025	1,025	1,025
No credential	82.2	71.7	10.6	17.8	14.0	3.8
S.E.	5.79	6.84	4.23	5.79	5.53	2.00
Unweighted n	69	69	69	69	69	69
Weighted n (in 1000s)	65	65	65	65	65	65

Table A104—Standard errors for table 106: Percentage distribution of 1989–90 beginning postsecondary students according to their enrollment and attainment status in spring 1994, by selected student characteristics—Continued

Selected student characteristics	Not enrolled in spring 1994			Enrolled in spring 1994		
	Total	No degree	Attained degree	Total	No degree	Attained degree
Transfer status through first degree						
Did not transfer	78.3	39.2	39.1	21.7	9.0	12.7
S.E.	1.04	1.32	1.23	1.04	0.74	0.80
Unweighted n	4,504	4,504	4,504	4,504	4,504	4,504
Weighted n (in 1000s)	1,632	1,632	1,632	1,632	1,632	1,632
Transferred	62.0	31.0	31.0	38.0	23.8	14.3
S.E.	1.91	1.74	1.79	1.91	1.68	1.27
Unweighted n	1,507	1,507	1,507	1,507	1,507	1,507
Weighted n (in 1000s)	658	658	658	658	658	658

NOTE: Percentages may not add to 100 due to rounding. Row n's may not add to total n's because of missing data.

SOURCE: U.S. Department of Education, National Center for Education Statistics, 1989–90 Beginning Postsecondary Students Longitudinal Study, Second Follow-up, 1994.

Table A105—Standard errors for table 107: Percentage distribution of 1989–90 beginning postsecondary students according to their attainment status in spring 1994 and, of those who attained a degree, type of degree, by selected student characteristics

Selected student characteristics	No degree total	Attained degree total	Type of degree attained: Certificate	Associate's	Bachelor's
Total	50.1	49.9	25.9	22.5	51.6
S.E.	1.09	1.09	1.46	1.43	1.73
Unweighted n	6,011	6,011	3,709	3,709	3,709
Weighted n (in 1000s)	2,290	2,290	1,144	1,144	1,144
Major in 1989–90					
Academic	40.9	59.1	8.6	19.4	72.0
S.E.	1.71	1.71	1.41	2.18	2.43
Unweighted n	2,093	2,093	1,465	1,465	1,465
Weighted n (in 1000s)	724	724	428	428	428
Vocational	48.4	51.6	36.7	22.7	40.6
S.E.	1.56	1.56	2.05	1.78	2.09
Unweighted n	3,135	3,135	2,051	2,051	2,051
Weighted n (in 1000s)	1,228	1,228	634	634	634
Degree working toward in 1989–90					
Certificate/license	35.8	64.2	89.3	8.0	2.8
S.E.	3.04	3.04	2.07	1.96	0.70
Unweighted n	912	912	702	702	702
Weighted n (in 1000s)	288	288	185	185	185
Associate's total	53.6	46.4	25.5	54.1	20.4
S.E.	2.54	2.54	3.29	3.48	2.82
Unweighted n	839	839	468	468	468
Weighted n (in 1000s)	566	566	263	263	263
Academic associate's	43.2	56.8	14.1	58.1	27.9
S.E.	4.38	4.38	3.81	5.53	4.53
Unweighted n	227	227	142	142	142
Weighted n (in 1000s)	168	168	96	96	96
Vocational associate's	58.0	42.0	32.1	51.9	16.1
S.E.	2.77	2.77	4.24	4.27	3.26
Unweighted n	612	612	326	326	326
Weighted n (in 1000s)	398	398	167	167	167
Bachelor's	41.1	58.9	5.3	11.4	83.4
S.E.	1.37	1.37	0.86	1.48	1.66
Unweighted n	3,395	3,395	2,328	2,328	2,328
Weighted n (in 1000s)	1,025	1,025	604	604	604
No credential	85.7	14.4	—	—	—
S.E.	4.71	4.71	—	—	—
Unweighted n	69	69	—	—	—
Weighted n (in 1000s)	65	65	—	—	—

Table A105—Standard errors for table 107: Percentage distribution of 1989–90 beginning postsecondary students according to their attainment status in spring 1994 and, of those who attained a degree, type of degree, by selected student characteristics—Continued

Selected student characteristics	No degree total	Attained degree total	Type of degree attained		
			Certificate	Associate's	Bachelor's
Transfer status through first degree					
Did not transfer	48.2	51.8	21.4	21.8	56.7
S.E.	1.36	1.36	1.52	1.70	1.94
Unweighted n	4,504	4,504	3,016	3,016	3,016
Weighted n (in 1000s)	1,632	1,632	846	846	846
Transferred	54.8	45.3	38.7	24.3	37.0
S.E.	1.93	1.93	3.19	2.63	2.53
Unweighted n	1,507	1,507	693	693	693
Weighted n (in 1000s)	658	658	298	298	298

—Too few sample observations for a reliable estimate.

NOTE: Percentages may not add to 100 due to rounding. Row n's may not add to total n's because of missing data.

SOURCE: U.S. Department of Education, National Center for Education Statistics, 1989–90 Beginning Postsecondary Students Longitudinal Study, Second Follow-up, 1994.

Table A106—Standard errors for table 108: Percentage distribution of 1989–90 beginning postsecondary students according to their transfer status in spring 1994 and, of those who transferred, type of destination institution, by selected student and institutional characteristics

Selected student and institutional characteristics	Did not transfer	Total transferred	Destination institution			
			Level		Control	
			4-year	Less-than-4-year	Public	Private
Total	65.5	34.5	51.6	48.4	77.9	22.1
S.E.	1.12	1.12	1.86	1.86	1.67	1.67
Unweighted n	5,997	5,997	1,781	1,781	1,781	1,781
Weighted n (in 1000s)	2,276	2,276	786	786	786	786
Major in 1989–90						
Academic	63.5	36.5	61.3	38.7	78.2	21.8
S.E.	1.93	1.93	3.30	3.30	2.65	2.65
Unweighted n	2,089	2,089	547	547	547	547
Weighted n (in 1000s)	719	719	262	262	262	262
Vocational	70.7	29.3	52.1	47.9	78.2	21.8
S.E.	1.44	1.44	2.88	2.88	2.52	2.52
Unweighted n	3,129	3,129	826	826	826	826
Weighted n (in 1000s)	1,220	1,220	357	357	357	357
Degree working toward in 1989–90						
Certificate/license	81.0	19.0	27.0	73.0	49.3	50.7
S.E.	2.26	2.26	5.15	5.15	6.02	6.02
Unweighted n	907	907	183	183	183	183
Weighted n (in 1000s)	286	286	54	54	54	54
Associate's total	59.3	40.8	54.8	45.2	79.7	20.3
S.E.	2.39	2.39	3.79	3.79	3.47	3.47
Unweighted n	835	835	316	316	316	316
Weighted n (in 1000s)	559	559	228	228	228	228
Academic associate's	42.3	57.7	62.8	37.2	83.9	16.1
S.E.	4.41	4.41	6.00	6.00	4.32	4.32
Unweighted n	226	226	122	122	122	122
Weighted n (in 1000s)	167	167	96	96	96	96
Vocational associate's	66.5	33.5	48.9	51.1	76.7	23.3
S.E.	2.67	2.67	4.79	4.79	4.32	4.32
Unweighted n	609	609	194	194	194	194
Weighted n (in 1000s)	392	392	131	131	131	131
Bachelor's	69.3	30.7	64.1	36.0	83.5	16.5
S.E.	1.43	1.43	2.76	2.76	1.81	1.81
Unweighted n	3,394	3,394	839	839	839	839
Weighted n (in 1000s)	1,022	1,022	313	313	313	313
No credential	63.9	36.1	29.6	70.5	59.1	40.9
S.E.	7.50	7.50	9.90	9.90	12.55	12.55
Unweighted n	69	69	31	31	31	31
Weighted n (in 1000s)	65	65	24	24	24	24

Table A106—Standard errors for table 108: Percentage distribution of 1989–90 beginning postsecondary students according to their transfer status in spring 1994 and, of those who transferred, type of destination institution, by selected student and institutional characteristics—Continued

Selected student and institutional characteristics	Did not transfer	Total transferred	Destination institution			
			Level		Control	
			4-year	Less-than-4-year	Public	Private
Level of institution in 1989–90						
4-year	70.1	29.9	57.0	43.0	80.7	19.3
S.E.	1.12	1.12	2.01	2.01	1.56	1.56
Unweighted n	3,806	3,806	1,057	1,057	1,057	1,057
Weighted n (in 1000s)	1,001	1,001	299	299	299	299
Less-than 4-year	61.9	38.2	48.4	51.6	76.1	23.9
S.E.	1.74	1.74	2.78	2.78	2.52	2.52
Unweighted n	2,191	2,191	724	724	724	724
Weighted n (in 1000s)	1,275	1,275	486	486	486	486
Control of institution in 1989–90						
Public	63.6	36.4	52.9	47.1	80.0	20.0
S.E.	1.43	1.43	2.29	2.29	2.06	2.06
Unweighted n	2,523	2,523	804	804	804	804
Weighted n (in 1000s)	1,683	1,683	612	612	612	612
Private, not-for-profit	67.9	32.2	57.5	42.5	73.0	27.0
S.E.	1.77	1.77	2.39	2.39	2.27	2.27
Unweighted n	2,478	2,478	753	753	753	753
Weighted n (in 1000s)	364	364	117	117	117	117
Private, for-profit	75.4	24.6	26.3	73.8	64.8	35.2
S.E.	2.02	2.02	3.94	3.94	4.25	4.25
Unweighted n	996	996	224	224	224	224
Weighted n (in 1000s)	230	230	57	57	57	57

NOTE: Percentages may not add to 100 due to rounding. Row n's may not add to total n's because of missing data.

SOURCE: U.S. Department of Education, National Center for Education Statistics, 1989–90 Beginning Postsecondary Students Longitudinal Study, Second Follow-up, 1994.

Table A107—Standard errors for table 109: Percentage of 1989–90 beginning postsecondary students who took an occupational licensing exam by 1994, and, of those who took at least one exam, percentage who took an exam in various fields, by major field category and degree goal

Major field category and degree goal	Took a licensing exam	Type of licensing exam: Teachers	Business/ finance	Nursing	Other medical	Cosmetology/ barbering	Engineering-related	Communications	Other licensing exam
Total	14.0	20.9	12.1	9.4	21.8	8.9	3.1	1.3	28.9
S.E.	0.70	1.82	1.63	1.50	2.24	1.52	0.89	0.67	2.52
Unweighted n	6,126	955	955	955	955	956	956	955	955
Weighted n (in 1000s)	2,345	327	327	327	327	327	327	327	327
Major in 1989–90									
Academic	14.0	58.1	7.7	2.2	15.3	2.2	0.0	0.1	25.1
S.E.	1.13	3.86	2.08	1.61	3.19	1.84	0.00	0.09	3.47
Unweighted n	2,082	313	313	313	313	313	313	313	313
Weighted n (in 1000s)	719	101	101	101	101	101	101	101	101
Vocational	14.6	2.2	15.3	13.4	23.1	12.8	4.3	1.4	32.0
S.E.	1.01	0.82	2.48	2.50	3.23	2.39	1.07	0.91	3.77
Unweighted n	3,118	528	528	528	528	529	529	528	528
Weighted n (in 1000s)	1,217	178	178	178	178	178	178	178	178
Degree working toward in 1989–90									
Certificate/license	20.7	0.9	3.4	13.8	25.7	30.1	0.0	0.2	29.6
S.E.	2.53	0.66	2.66	3.34	5.85	5.80	0.00	0.20	5.96
Unweighted n	906	221	221	221	221	221	221	221	221
Weighted n (in 1000s)	286	59	59	59	59	59	59	59	59
Associate's total	12.7	17.3	6.3	14.5	18.9	3.9	0.2	2.6	41.6
S.E.	1.66	4.62	3.78	5.21	5.45	2.62	0.15	2.20	7.80
Unweighted n	834	118	118	118	118	118	118	118	118
Weighted n (in 1000s)	561	71	71	71	71	71	71	71	71
Academic associate's	11.1	64.6	0.7	0.6	9.1	0.6	0.0	0.0	30.5
S.E.	2.54	9.72	0.70	0.60	8.15	0.65	0.00	0.00	9.22
Unweighted n	225	37	37	37	37	37	37	37	37
Weighted n (in 1000s)	164	18	18	18	18	18	18	18	18
Vocational associate's	13.4	1.0	8.2	19.3	22.2	5.0	0.2	3.4	45.4
S.E.	1.96	0.74	5.04	6.69	6.62	3.60	0.21	3.01	8.92
Unweighted n	609	81	81	81	81	81	81	81	81
Weighted n (in 1000s)	397	53	53	53	53	53	53	53	53
Bachelor's	13.9	33.6	19.1	5.2	19.5	1.8	5.4	0.5	24.1
S.E.	0.79	2.69	2.52	1.39	2.92	0.72	1.33	0.32	2.93
Unweighted n	3,378	491	491	491	491	492	492	491	491
Weighted n (in 1000s)	1,016	140	140	140	140	141	141	140	140
No credential	11.6	—	—	—	—	—	—	—	—
S.E.	4.52	—	—	—	—	—	—	—	—
Unweighted n	69	—	—	—	—	—	—	—	—
Weighted n (in 1000s)	65	—	—	—	—	—	—	—	—

—Too few sample observations for a reliable estimate.

NOTE: Row n's may not add to total n's because of missing data. Estimates appearing as 0.0 or 0.00 may be nonzero but less than 0.05 or 0.005.

SOURCE: U.S. Department of Education, National Center for Education Statistics, 1989–90 Beginning Postsecondary Students Longitudinal Study, Second Follow-up, 1994.

Table A108—Standard errors for table 110: Among 1989–90 beginning postsecondary students who took an occupational licensing exam, percentage who passed at least one exam by 1994, and the pass rate by occupational field

	Passed a licensing exam	Type of licensing exam							
		Teachers	Business/ finance	Nursing	Other medical	Cosme- tology/ barbering	Engin- eering- related	Communi- cations	Other licensing exam
Total	91.1	92.7	80.5	97.3	99.0	97.4	95.8	100.0	92.1
S.E.	1.42	2.86	5.03	1.33	0.67	1.19	1.90	0.00	2.52
Unweighted n	956	202	132	111	178	93	34	8	250
Weighted n (in 1000s)	327	65	38	28	69	29	9	4	94

SOURCE: U.S. Department of Education, National Center for Education Statistics, 1989–90 Beginning Postsecondary Students Longitudinal Study, Second Follow-up, 1994.

Table A109—Standard errors for table 111: Percentage distribution of all adults aged 18 years or older and of those in the labor force according to their employment status, by educational attainment: 1996

Educational attainment	Of all adults: Employed	Of all adults: Unemployed	Of all adults: Not in labor force	Of those in the labor force: Employed	Of those in the labor force: Unemployed
Total	65.1	3.2	31.8	95.3	4.7
S.E.	0.17	0.06	0.09	0.09	0.09
Unweighted n	89,406	89,406	89,406	60,553	60,553
Weighted n (in 1000s)	193,486	193,486	193,486	132,013	132,013
Less than high school completion	39.4	4.4	56.2	90.0	10.0
S.E.	0.42	0.17	0.22	0.39	0.39
Unweighted n	15,387	15,387	15,387	6,491	6,491
Weighted n (in 1000s)	34,089	34,089	34,089	14,921	14,921
High school completion	63.7	3.7	32.6	94.5	5.5
S.E.	0.30	0.12	0.15	0.17	0.17
Unweighted n	30,571	30,571	30,571	20,399	20,399
Weighted n (in 1000s)	65,349	65,349	65,349	44,058	44,058
Some college, no degree	69.7	3.0	27.3	95.9	4.2
S.E.	0.37	0.14	0.19	0.19	0.19
Unweighted n	17,451	17,451	17,451	12,625	12,625
Weighted n (in 1000s)	38,233	38,233	38,233	27,809	27,809
Associate's degree	77.5	2.6	20.0	96.8	3.2
S.E.	0.57	0.22	0.29	0.27	0.27
Unweighted n	6,304	6,304	6,304	5,057	5,057
Weighted n (in 1000s)	13,431	13,431	13,431	10,751	10,751
Bachelor's degree or higher	79.6	1.7	18.7	97.9	2.1
S.E.	0.31	0.10	0.16	0.12	0.12
Unweighted n	19,693	19,693	19,693	15,981	15,981
Weighted n (in 1000s)	42,384	42,384	42,384	34,474	34,474

NOTE: Percentages may not add to 100 due to rounding. Row n's may not add to total n's because of missing data.

SOURCE: U.S. Department of Commerce, Bureau of the Census, October Current Population Survey, 1996.

Table A110—Standard errors for table 112: Percentage distribution of 1989–90 beginning postsecondary students who were not enrolled in 1994 according to their February 1994 employment status and of those employed, type of primary occupation in 1993, by selected student and institutional characteristics

Selected student and institutional characteristics	Employment status in Feb. 1994 Not employed	Employed	Primary occupation in 1993 Clerical	Services/ sales	Managerial/ computer	Professional	Craft/repair/labor/ machining	Other
Total	21.8	78.2	24.7	21.6	21.0	9.7	15.5	7.6
S.E.	1.05	1.05	1.20	1.15	1.02	0.71	1.02	0.75
Unweighted n	4,220	4,220	3,580	3,580	3,580	3,580	3,580	3,580
Weighted n (in 1000s)	1,585	1,585	1,361	1,361	1,361	1,361	1,361	1,361
Most recent major								
Academic	22.5	77.5	27.4	22.6	19.3	11.4	8.2	11.1
S.E.	2.02	2.02	2.17	1.99	1.93	1.43	1.41	1.42
Unweighted n	1,206	1,206	1,056	1,056	1,056	1,056	1,056	1,056
Weighted n (in 1000s)	385	385	345	345	345	345	345	345
Vocational	20.8	79.2	23.4	21.7	22.2	9.9	17.8	5.0
S.E.	1.33	1.33	1.57	1.57	1.53	0.92	1.37	0.95
Unweighted n	2,411	2,411	2,070	2,070	2,070	2,070	2,070	2,070
Weighted n (in 1000s)	935	935	808	808	808	808	808	808
Level of institution in 1989–90								
4-year	21.7	78.3	24.6	21.9	21.1	14.8	9.4	8.2
S.E.	1.13	1.13	1.30	1.15	1.11	0.93	0.93	0.83
Unweighted n	2,322	2,322	2,012	2,012	2,012	2,012	2,012	2,012
Weighted n (in 1000s)	601	601	521	521	521	521	521	521
Less-than-4-year	21.8	78.2	24.7	21.5	20.9	6.5	19.3	7.1
S.E.	1.53	1.53	1.76	1.68	1.53	0.97	1.55	1.09
Unweighted n	1,898	1,898	1,568	1,568	1,568	1,568	1,568	1,568
Weighted n (in 1000s)	984	984	840	840	840	840	840	840
Control of institution in 1989–90								
Public	20.9	79.1	24.0	22.3	21.2	8.3	15.6	8.6
S.E.	1.37	1.37	1.55	1.52	1.36	0.89	1.33	1.04
Unweighted n	1,590	1,590	1,368	1,368	1,368	1,368	1,368	1,368
Weighted n (in 1000s)	1,112	1,112	964	964	964	964	964	964
Private, not-for-profit	17.9	82.1	23.6	18.9	22.7	18.9	8.1	7.7
S.E.	1.08	1.08	1.51	1.62	1.54	1.39	0.95	0.84
Unweighted n	1,656	1,656	1,445	1,445	1,445	1,445	1,445	1,445
Weighted n (in 1000s)	248	248	220	220	220	220	220	220
Private, for-profit	30.3	69.7	29.6	21.4	17.5	5.8	24.1	1.8
S.E.	2.43	2.43	2.72	1.90	1.76	1.25	2.66	0.54
Unweighted n	974	974	767	767	767	767	767	767
Weighted n (in 1000s)	225	225	177	177	177	177	177	177

NOTE: Percentages may not add to 100 due to rounding. Row n's may not add to total n's because of missing data.

SOURCE: U.S. Department of Education, National Center for Education Statistics, 1989–90 Beginning Postsecondary Students Longitudinal Study, Second Follow-up, 1994.

Table A111—Standard errors for figure 7: Average employer rating of hiring factors for front-line workers in an established applicant pool: 1997

	Average employer rating (on a 1–5 scale)*					
Rating	Attitude	Communications skills	Industry-based credential	Years of completed schooling	Academic performance	Reputation of applicant's school
Total	4.6	4.1	3.2	2.9	2.5	2.0
S.E.	0.02	0.03	0.04	0.03	0.04	0.03
Unweighted n	2,746	2,749	2,742	2,746	2,748	2,746
Weighted n (in 1000s)	587	587	585	587	587	587

*A response of 1 indicates the hiring factor is not important and is not considered in hiring; a rating of 5 indicates it is very important to employers.

NOTE: The sample is made up of private, for-profit employers with 20 or more employees.

SOURCE: 1997 National Employer Survey, Phase II. Administered by the U.S. Bureau of the Census; designed and funded by the National Center on the Educational Quality of the Workforce at the University of Pennsylvania.

Table A112—Standard errors for figure 9: Percentage distribution of employers reporting that the skills required to do production or support jobs at an acceptable level increased, decreased, or remained the same during the last 3 years: 1997

	Increased	Decreased	Remained the same
Total	52.9	5.9	41.2
S.E.	1.59	0.75	1.57
Unweighted n	2,768	2,768	2,768
Weighted n (in 1000s)	594	594	594

NOTE: The sample is made up of private, for-profit employers with 20 or more employees. Percentages may not add to 100 due to rounding.

SOURCE: 1997 National Employer Survey, Phase II. Administered by the U.S. Bureau of the Census; designed and funded by the National Center on the Educational Quality of the Workforce at the University of Pennsylvania.

Table A113—Standard errors for figure 11a: Percentage distribution of employers reporting that the formal training provided to employees has increased, decreased, or remained the same during the last 3 years: 1994

Employers	Increased	Decreased	Remained the same
Total	71.8	1.7	26.6
S.E.	2.58	0.73	2.54
Unweighted n	2,718	2,718	2,718
Weighted n (in 1000s)	500	500	500

NOTE: The sample is made up of private, for-profit employers with 20 or more employees. Percentages may not add to 100 due to rounding.

SOURCE: 1994 National Employer Survey, Phase I. Administered by the U.S. Bureau of the Census; designed and funded by the National Center on the Educational Quality of the Workforce at the University of Pennsylvania.

Table A114—Standard errors for figure 11b: Percentage of employers reporting an increase in formal training during the last 3 years, by reason for increase: 1994

Employers	To remain competitive	Need to improve quality of output	Need to improve productivity	Changes in technology	Changes in products or services	New hires did not have necessary skills	Changes in organization of work
Total	91.9	90.9	87.0	80.7	74.9	71.5	70.7
S.E.	1.86	1.96	2.29	2.69	2.95	3.09	3.10
Unweighted n	2,099	2,100	2,099	2,100	2,100	2,091	2,099
Weighted n (in 1000s)	355	355	355	355	355	351	355

NOTE: The sample is made up of private, for-profit employers with 20 or more employees. Row n's may not add to total n's because of missing data.

SOURCE: 1994 National Employer Survey, Phase I. Administered by the U.S. Bureau of the Census; designed and funded by the National Center on the Educational Quality of the Workforce at the University of Pennsylvania.

Table A115—Standard errors for figure 13: Percentage of firms with work-based learning (WBL) employees reporting that none of their new front-line workers with WBL experience needed remedial training or were fired or quit within 1 year: 1997

	Percentage of firms reporting WBL hires		
Employers	Did not need remedial training	Were not fired within 1 year	Did not quit within 1 year
Total	81.1	55.6	34.6
S.E.	2.2	2.8	2.7
Unweighted n	958	927	926
Weighted n (in 1000s)	191	191	188

NOTE: The sample is made up of private, for-profit employers with 20 or more employees. Row n's may not add to total n's because of missing data.

SOURCE: 1997 National Employer Survey, Phase II. Administered by the U.S. Bureau of the Census; designed and funded by the National Center on the Educational Quality of the Workforce at the University of Pennsylvania.

Table A116—Standard errors for figure 22: Percentage of public schools offering various work-based activities: 1997

	Cooperative education	Job shadowing	Internship	Mentorship
Total	47.6	42.9	24.8	24.5
S.E.	1.62	1.65	1.45	1.46
Unweighted n	14,814	13,963	13,687	13,534
Weighted n (in 1000s)	3,065	2,960	2,930	2,886

NOTE: The sample is made up of public schools with a 12th grade. Schools that were identified by school district officials as primarily vocational in nature were not included in the sampling frame.

SOURCE: U.S. Department of Labor, Bureau of Labor Statistics, National Longitudinal Survey of Youth, 1996–97.

Appendix B—Data Sources and Technical Notes

Data Sources

This section describes the data sources included in this publication.

Beginning Postsecondary Students Longitudinal Study

The Beginning Postsecondary Students Longitudinal Study, Second Follow-up (BPS:90/94) followed students from the 1989–90 National Postsecondary Student Aid Study (NPSAS:90) who were identified as first-time beginning students in academic year 1989–90. A computer-assisted telephone interview (CATI) was conducted with these students in 1994, 4 years after the Base Year survey. The CATI system provides interviewers with screens of questions and guides the interviewer and respondent through the interview. The BPS:94 CATI collected information concerning enrollment, program completion, education financing, employment, and family formation; graduate school access and enrollment; and civic participation. The data derived from this survey permit a variety of analyses concerning postsecondary persistence and completion, entry into the work force, and civic participation.

The BPS sample was selected using a three-step procedure, with stratified samples and differential probabilities of selection at each level. First, postsecondary institutions were selected within geographic strata. Once institutions were organized by zip code and state, they were further stratified by control (i.e., public; private, not-for-profit; or private, for-profit) and degree offerings (less-than-2-year; 2- to 3-year; 4-year nondoctorate-granting; and 4-year doctorate-granting). Within each stratum of institution type, institutions were sampled and then students within institutions were sampled. Students who were 1989–90 BPS respondents were then followed up in 1992 and again in 1994. Students who met either of the following criteria were designated as respondents to the 1994 survey: if they confirmed all schools attended during the intervening years, or if they provided their enrollment, employment, and postsecondary degree attainment status through February 1994. Among the eligible sample of students, the unweighted BPS:90/94 response rate is 91.4 percent. The weighted response rate, using the NPSAS:90 analysis weights, is 91.0 percent. Among respondents, about 10 percent of sample members did not have sufficiently detailed enrollment histories to allow for classification in the persistence variables. For more information on BPS:90/94, consult *Beginning Postsecondary Students*

Longitudinal Study Second Follow-up (BPS:90/94) Final Technical Report (NCES 96-153), Washington, DC: U.S. Department of Education, National Center for Education Statistics, 1996.

Current Population Survey

The U.S. Census Bureau's Current Population Survey (CPS) collects household data on a monthly basis, primarily on labor force and demographic items. The October supplement to the basic CPS survey focuses on school enrollment and other education-related topics in detail; these data are collected for all household members age 3 or older. The CPS uses a sample of the civilian noninstitutional population of the United States; excluded from the population surveyed are members of the Armed Forces, inmates of correctional institutions, and institutionalized patients. CPS data files include information from approximately 60,000 households on about 110,000 people. Households in all 50 states and the District of Columbia are included. An adult member of the household (minimum age 15) serves as the respondent, providing information on all household members.

Approximately 729 sample areas and 1,973 counties, independent cities, and minor civil divisions are included in the stratified sampling frame. The samples are based on decennial census data, updated frequently to reflect new construction and demolition. The sampling design is revised regularly to improve data quality and reliability. For 1993 and roughly the preceding decade, the CPS samples were drawn from 1980 decennial census files. From 1994 on, the 1990 census was used as the basis for sampling and for weights; the 1990 census included adjustments for estimated undercounts of various groups. Also in 1994, the questionnaire for the CPS was redesigned, and the computer-assisted personal interviewing (CAPI) method of data collection was introduced. Standard errors for this report were estimated using generalized variance formulas, since the strata and PSU information are not available.

For additional information on the CPS and data it provides, refer to publications in the Current Population Reports series (Series P-20). Periodic reports under the title *School Enrollment—Social and Economic Characteristics of Students and Educational Attainment in the United States* may be of particular interest.

High School and Beyond

The High School and Beyond (HS&B) longitudinal survey was first administered in 1980 to a stratified, nationally representative sample of approximately 30,000 high school sophomores and 28,000 high school seniors from more than 1,000 high schools. Follow-up surveys were administered in 1982, 1984, 1986, and 1992. This report uses data for the sophomore cohort from the First, Second, and Fourth Follow-up Surveys (1982, 1984, and 1992) and the High School Transcript Survey. Smaller subsamples of the sophomore cohort were surveyed in 1984 and 1992. For purposes of this report, analysis samples were limited to public high school students by using the variable HSTYPE. This group was reduced further by including only public high school graduates. Graduation status was defined by using a composite of the graduation status variables RESNLEFT, FUSTTYPE, and SY12 from the Transcript, First Follow-up, and Second Follow-up surveys, respectively. Only those graduates who earned 16 or more Carnegie units in high school and a positive number of Carnegie units in English were included in the samples.

The First Follow-up and High School Transcript Survey were used to examine course-taking patterns for 1982 public high school graduates. The analysis sample comprised 9,596 students. To explore the postsecondary enrollment patterns of 1982 public high school graduates in 1984, researchers used the Second Follow-up, resulting in an analysis sample of 5,984 students. Finally, the report analyzed the Fourth Follow-up data to investigate 1982 public high school graduates' postsecondary and labor market experiences 10 years after graduation in 1992. This final analysis sample comprised 6,787 students.

Standard errors were computed using the Taylor series approximation method. For further information on HS&B, consult Calvin Jones et al., *High School and Beyond Transcript Survey: 1982 Data File Users Manual*, Washington, D.C.: National Center for Education Statistics, U.S. Department of Education, 1984. You may also speak to Aurora D'Amico at (202) 219-1365.

High School Transcript Studies

Conducted in association with the National Assessment of Educational Progress (NAEP), the 1990 and 1994 High School Transcript Studies (1990 and 1994 HSTS) provided course-taking and demographic information for a stratified, nationally representative sample of high school students. The 1990 HSTS collected transcript data for 21,531 seniors from 330 high schools, while the 1994 HSTS collected transcript data for 24,844 seniors from 340 high schools. Only public high school graduates who earned 16 or more Carnegie units in high school and a positive number of Carnegie units in English were included in each of the samples. The HSTS assigned a course identification code number, based on the Classification of Secondary School Courses (CSSC), to each course taken by a student. The *1998 Revision of the Secondary Schools Taxonomy* further classified these CSSC codes into subject and program areas (see figure 1 in chapter I). This taxonomy served to standardize all of the transcripts included in the sample. Standard errors were computed using the Taylor series approximation method. For further information on the 1990 HSTS, see Stanley Legum et al., *The 1990 High School Transcript Study, Final Technical Report*, Washington, D.C.: National Center for Education Statistics, U.S.

Department of Education, December 1992. For further information on the 1994 HSTS, see Stanley Legum et al., *The 1994 High School Transcript Study Tabulations: Comparative Data on Credits Earned and Demographics for 1994, 1990, 1987, and 1982 High School Graduates, REVISED,* Washington, D.C.: National Center for Education Statistics, U.S. Department of Education, September 1998. You may also speak to Janis Brown at (202) 208-0928.

National Education Longitudinal Study of 1988

The National Education Longitudinal Study of 1988 (NELS:88) was a stratified, nationally representative sample of almost 26,000 students in the eighth grade from more than 1,000 public and private junior high schools in the United States. Follow-up surveys were administered in 1990, 1992, and 1994. The Second Follow-up "freshened" the sample to make it representative of students enrolled in the twelfth grade in the spring of 1992 by adding students who were not in the Base Year either because they were not in the country or because they were not in the eighth grade in the spring of 1992. This report used information from the Second and Third Follow-up Surveys and the High School Transcript File.

Transcript data were available for about 17,200 students. The sample used for this report was limited to public high school graduates who earned a regular high school diploma. The variable G12CTRL2 was used to restrict the sample to students attending public high schools, and the variable FRREASL was used to further limit the sample to those students who graduated from high school. (Graduates earning special education diplomas were excluded from the sample.) Only those graduates who earned more than 16 total Carnegie units in high school, and a positive number of Carnegie units in English, were included in the sample.

This report used the Second Follow-up and High School Transcript File to examine the course-taking patterns and academic achievement of 11,780 public high school graduates in 1992. To explore the postsecondary and labor market experiences of this graduating class 2 years after high school, researchers analyzed Fourth Follow-up data. The 1994 sample comprised 8,550 public high school graduates.

Standard errors for the data were computed using the Taylor series approximation method. For further information on NELS:88, consult Steven J. Ingelos et al., *National Education Longitudinal Study of 1988 Second Follow-up: Data File User's Manual,* Washington D.C.: National Center for Education Statistics, U.S. Department of Education, September 1994. You may also speak to Jeffrey Owings at (202) 219-1777.

National Employer Surveys

The National Employer Surveys (NES) of 1994 and 1997 gathered data from a random sample of private firms on the perceived proficiency of the work force and investments in formal and informal training. The surveys were designed by the National Center on the Educational Quality of the Workforce and were administered by the Bureau of the Census. Public and not-for-profit institutions, establishments with fewer than 20 employees, and corporate headquarters were excluded from the sample. The survey oversampled establishments in the manufacturing sector and those with more than 100 employees. In 1994 and 1997, respectively, 3,167 and 3,081 firms were included in the NES samples. Standard errors take into account the average design effect of the survey, which was calculated through the jackknife method. Weights were created to make the sample representative of the universe of private U.S. firms with 20 or more employees. For more information about the surveys, contact Dan Shapiro at the Institute for Research in Higher Education at the University of Pennsylvania at (215) 898-4585.

National Longitudinal Study of Youth

The National Longitudinal Study of Youth (NLSY) of 1997 collected data on school characteristics, programs, and practices through its School Administrator Survey (SAS) component. The SAS was designed as a census of public and private schools with a twelfth grade among those schools in the geographic areas in which youth in the NLSY student sample were drawn. Data from the 3,281 public schools in the sample were analyzed. Weights in the data file corrected for nonresponse and made the sample representative of the universe of U.S. schools with a twelfth grade, excluding full-time and area vocational schools. Standard errors take into account the average design effect of the survey, which was calculated through the jackknife method. For more information about this survey, please contact Chuck Pierrets at the Bureau of Labor Statistics at (202) 606-7519.

National Postsecondary Student Aid Study

The National Postsecondary Student Aid Study (NPSAS) is a comprehensive nationwide study conducted to determine how students and their families pay for postsecondary education. It also describes demographic and other characteristics of enrolled students. The study is based on a nationally representative sample of students taking courses for credit at postsecondary education institutions that are eligible to award federal financial aid. The sample includes students attending all types and levels of institutions, including public and private institutions and less-than-2-year institutions, 2-year institutions, and 4-year colleges and universities. The study is designed to address the policy questions resulting from the rapid growth of financial aid programs and the succession of changes in financial aid program policies since 1986. The first NPSAS was conducted in 1986–87, followed by successive surveys in 1989–90, 1992–93, and 1995–96. The 1989–90 and 1995–96 studies (NPSAS:90 and NPSAS:96) were used in this report.

NPSAS:90 information was obtained from approximately 1,100 postsecondary institutions on about 47,000 undergraduates. Standard errors for the data were computed using the Taylor series approximation method. Some items on the NPSAS:90 survey had high item nonresponse. For more information on the NPSAS:90 survey, consult the U.S. Department of Education, National Center for Education Statistics, *Methodology Report for the 1989–90 National Postsecondary Student Aid Study*, Washington, D.C.: 1992.

NPSAS:96 information was obtained from approximately 830 postsecondary institutions on approximately 41,000 undergraduates. The weighted response rate for institutional record data collection was 93.1 percent. The weighted effective response rate for the telephone interviews was 76.2 percent. Standard errors for the data were computed using the Taylor series approximation method. For more information on the NPSAS:96 survey, consult the U.S. Department of Education, National Center for Education Statistics, *Methodology Report for the 1995–96 National Postsecondary Student Aid Study* (NCES 98-073), Washington, D.C.: 1997.

Schools and Staffing Survey

The Schools and Staffing Survey (SASS) collects public- and private-sector data on the nation's elementary and secondary school teaching force, aspects of teacher supply and demand, teacher workplace conditions, characteristics of school administrators, and school policies and programs. Three such surveys have been administered; in 1987–88, 1990–91, and 1993–94. This report used the 1990–91 and 1993–94 SASS to report trends in teacher characteristics and the 1993–94 SASS to describe professional development activities.

The report restricted the survey samples to public school teachers of grades 9–12. The relevant samples used for the analysis in this report included 23,650 teachers from the 1990–91 SASS, and 22,552 teachers from the 1993–94 SASS. The report used linked data from the Teacher and School Files. Standard errors were calculated using the Balanced Repeated Replicates (BRR) weighting method. Teachers who taught 50 percent or more of their courses in vocational subjects were classified as "vocational." For a detailed description of the procedures used to identify vocational teachers, see Phillip Kaufman, *A Comparison of Vocational and Non-Vocational Public School Teachers in Grades 9 to 12*, Washington, D.C.: National Center for Education Statistics, U.S. Department of Education, 1991. For general background on the 1990–91 SASS, see Steven Kaufman and Hertz Huang, *1990–91 Schools and Staffing Survey: Sample*

Design and Estimation, Technical Report, Washington, D.C.: National Center for Education Statistics, U.S. Department of Education, 1993. For general background on the 1993–94 SASS, see *1993–94 Schools and Staffing Survey: Sample Design and Estimation*, Technical Report, Washington, D.C.: National Center for Education Statistics, U.S. Department of Education, 1996. For additional information, you can also contact Charles Hammer, National Center for Education Statistics at (202) 219-1330 or Charles_Hammer@ed.gov.

Technical Notes

Differences Among Published Data

The Secondary School Taxonomy that was used to classify high school courses in this report was recently revised by NCES (see figure 1 in the Introduction). Generally, only minor revisions in course classifications were made, although a few were notable. For example, the revised taxonomy now includes English as a Second Language courses under English rather than under Non-English (previously Foreign) Languages. Additionally, all computer-related courses are now included under the Vocational curriculum, whereas some were previously included under Mathematics. Because of these and other shifts in the placement of specific courses, there may be small differences between the percentages and average credits published in this report and those published in previous *Vocational Education in the United States* publications or other NCES publications, such as the *Digest of Education Statistics*. However, differences should generally be small. See D. Bradby and E.G. Hoachlander, *1998 Revision of the Secondary School Taxonomy* (Washington, D.C.: U.S. Department of Education, National Center for Education Statistics, Working Paper No. 1999-06, March 1999).

Generally, differences among published data may also be due to the application of different rules for determining which students should be included in an analysis. This report bases its analysis of high school course taking on the sample of public high school graduates who earned 16 or more Carnegie units in high school and a positive number of Carnegie units in English. See M. Alt and D. Bradby, *Procedures Guide for Transcript Studies* (Washington, D.C.: U.S. Department of Education, National Center for Education Statistics, Working Paper No. 1999-05, March 1999).

Accuracy of Estimates

The statistics in this report are estimates derived from samples. Two broad categories of error occur in such estimates: sampling and nonsampling error. Sampling errors happen because observations are made only on samples of students, not on entire populations. Nonsampling errors occur not only in surveys of sample groups but also in complete censuses of entire populations.

Nonsampling errors can be caused by a number of factors: inability to obtain complete information about all students in all schools in the sample (some students or schools refused to participate, or students participated but answered only certain items); ambiguous definitions; differences in interpreting questions; inability or unwillingness to give correct information; mistakes in recording or coding data; and other errors in collecting, processing, sampling, and estimating missing data.

The accuracy of a survey result is determined by the effect of sampling and nonsampling errors. In surveys with sample sizes as large as those used in this report, the sampling errors generally are not the primary concern, except where separate estimates are made for relatively small subpopulations, such as Asian/Pacific Islanders or American Indian/Alaskan Natives. In this report, small sample sizes were generally not a problem. Instances are noted where sample sizes were small enough to affect sampling errors.

Complex Sampling

The BPS:90/94, CPS, HS&B, 1990 and 1994 HSTS, NELS:88, NES, NLSY–97, NPSAS, and SASS all use multistage-sample designs. The resulting samples, while representative, are not simple random samples. For example, students in both HSTS and in HS&B were selected within high schools that were grouped within strata. Because of the effects of the multistage designs (students within schools and schools within various strata) and because of the effects of certain adjustments to the sampling weights (poststratification and weighting adjustments), observations made on different students cannot be assumed to be independent of one another. As a result, ordinary formulas used to estimate the variance of sample statistics, based on assumptions of independence and simple random samples, will tend to underestimate the true sample variability. To overcome this problem, standard errors for most estimates in this report were calculated using either replication procedures or Taylor residual techniques.

All estimates, standard errors, unweighted n's, and weighted n's are available from NCES in comma-separated form for use with all major spreadsheet software and microcomputers. In addition, hard copies of the taxonomies used to categorize courses and programs are also available, as well as hard copies of all tables in the report. Those interested in this information should contact the Early Childhood, International, and Cross-Cutting Studies Division, National Center for Education Statistics, 555 New Jersey Avenue NW, Washington, D.C. 20208.

Statistical Procedures

Most statistical tests used in this report were based on *t* statistics and included estimates of the probability of a Type I error, or significance level. The significance levels were determined by calculating *t* values for the differences between each pair of means or proportions and by comparing these to published tables of significance levels for two-tailed hypothesis testing. These *t* values may be computed for comparisons using independent estimates with the following formula:

$$t = \frac{P_1 - P_2}{\sqrt{se_1^2 + se_2^2}}$$

where P_1 and P_2 are the estimates to be compared and se_1 and se_2 are their corresponding standard errors.

In some cases, comparisons within and among rows or columns of data were made, and one of several tests of dependence was used. These tests included linear trend and chi-squared tests for tables of proportions, and weighted least squares (WLS) regression and analysis of variance (ANOVA) for tables of means. Linear trend and WLS tests were used to examine whether an increasing or decreasing trend existed within a single row or column of ordered data and to compare rows or columns of ordered data. Chi-squared and ANOVA tests were used to compare rows or columns of unordered data.

Multiple Comparisons

The baseline *t* value for the statistical analysis performed in this report is assumed to be 1.96, which represents the number of standard errors away from the expected value of the sample mean. This corresponds to a 95 percent confidence interval or a 5 percent alpha level. As the number of comparisons on the same set of data increases, so does the likelihood that the *t* value for at least one of the comparisons will exceed 1.96 simply due to increases in sampling error. For a single comparison, there is a 5 percent chance that the *t* value will exceed 1.96 due to sampling error. For five tests, the risk of getting at least one *t* value higher than 1.96 increases to 23 percent, and for 20 comparisons, 64 percent.

One way to compensate for this risk when making multiple comparisons is to adjust the alpha level to take into account the number of comparisons being made. For example, rather than establishing an alpha level of 5 percent for a single comparison, the alpha level is set to ensure that the likelihood is less than 5 percent that the *t* value for any of the comparisons exceeds the critical value by chance alone when there are truly no differences for any of the comparisons.

This Bonferroni adjustment is calculated by taking the desired alpha level and dividing it by the number of possible comparisons, based on the variables(s) being compared. The higher *t* value corresponding to the revised lower alpha level must be exceeded in order for any of the comparisons to be considered significant. For example, to test for differences in participation rates between whites, blacks, and Hispanics, the following steps would be involved:

- Establish the number of comparisons—in this case three (whites and blacks, whites and Hispanics, and blacks and Hispanics). The number of two-way comparisons that can be made equals [(n)(n-1)]/2, where n is the number of variable categories. Thus, with three categories, the number of possible comparisons is [(3)(2)]/2 = 3.
- Divide the desired alpha level, 0.05, by the number of comparisons (e.g., three) to obtain the new alpha level (0.05/3 = 0.0166).
- Consult a table of *t* statistics (or the standard normal table for z values if the n is large) to find the two-tailed *t* value that corresponds to that alpha (*t* = 2.39 for alpha = 0.0166).

All comparisons in this report were tested using the Bonferroni adjustment for *t* tests. The number of comparisons used to make the Bonferroni adjustment was based on the relationship(s) being tested.

Appendix C—Glossary

Academic subjects: The high school academic curriculum is divided into the main subject areas listed below and corresponds to the 1998 revised Secondary School Taxonomy categories. The examples given are not exhaustive of the courses included in each subject area.

Mathematics: Includes courses in general mathematics, consumer mathematics, pre-algebra, algebra 1, geometry, algebra 2 through precalculus (including Algebra 2 and 3, Trigonometry, Analytic Geometry, and Mathematical Analysis), advanced math (including Calculus, AP Calculus, IB Mathematics, and Probability and Statistics), unified mathematics (an integrated course sequence usually taught over two or three years), and occupationally related mathematics (including Vocational Mathematics, Business Mathematics, and Technical Mathematics). Course levels indicated in this report include the "below Algebra 1"/"Algebra 1 or higher" distinction, as well as functional, basic, and regular designations.

Science: Includes courses in survey science, biological science (including Biology and some specialized courses such as Botany, Zoology, and Anatomy and Physiology), chemistry, physics, earth science, physical science, and engineering. Course levels indicated in this report include basic, regular, advanced/honors, specialized topic, and AP/IB designations.

English: Includes survey courses (including language skills courses and English 9–12), as well as courses in literature, composition and writing, speech, and English as a Second Language. Course levels indicated in this report include functional, basic, regular, advanced/honors, and AP/IB designations.

Social studies: Includes courses in American history, world history, government and politics, economics, behavioral sciences (including Psychology and Sociology), geography, and social science/humanities/other (including Social Studies, American Studies, Area Studies, Women's Studies, Law, Anthropology, and Philosophy). Course levels indicated in this report include basic, regular, advanced/honors, specialized topic, and AP/IB designations.

Fine arts: Includes courses in visual arts, music, dance, and theater arts.

Non-English languages: Includes courses in Spanish, French, German, Latin, Italian, and other non-English languages and literatures.

Apprenticeship: Programs registered with the Department of Labor or a state apprenticeship agency in accordance with the Act of August 16, 1937, commonly known as the National Apprenticeship Act, which is conducted or sponsored by an employer, a group of employers, or a joint apprenticeship committee representing both employers and a union, and which contains all terms and conditions for the qualification, recruitment, selection, employment, and training of apprentices.

Carnegie unit: A standard of measurement used for secondary or high school education that represents the completion of a course that meets 1 period per day for 1 year. See **credit**.

College preparatory: Public high school graduates were classified as college preparatory if they completed 4.0 credits in English; 3.0 credits in mathematics at the Algebra 1 level or higher; 2.0 credits in biology, chemistry, and/or physics; 2.0 credits in social studies with at least 1.0 credit in U.S. or World History; and 2.0 credits in a single foreign (non-English) language during high school. Students who met both the vocational concentrator (see below) and college preparatory criteria were generally included with the vocational group. In a few instances, this "both" group was reported separately. See **vocational concentrator** and **other/general students**.

Community college: A public institution that awards associate's degrees or less-than-4-year, subbaccalaureate certificates as its highest award type. See **postsecondary institutions, public 2-year institutions**.

Comprehensive high school: The typical U.S. high school, offering, at minimum, academic studies and usually some vocational education.

Cooperative education: Programs that allow students to earn course credit for paid or unpaid employment that is related to a specific occupational program of study. In contrast, general work experience is not connected to a specific occupational program.

Core academic standards: In the 1983 publication *A Nation at Risk*, the National Commission on Excellence in Education recommended that high school graduation requirements be strengthened, and that, at a minimum, all students take 4 years of English; 3 years each of mathematics, science, social studies; and one-half year of computer science. The "core academic standards" referred to in this report include the recommendations for English, mathematics, science, and social studies.

Courses completed: Public high school graduates were said to have completed a course in a subject area if they earned a Carnegie unit, or a fraction of a unit, in that subject area.

Credit: At the secondary or high school education level, credits and Carnegie units were used interchangeably to represent the completion of a course that meets 1 period per day for 1 year. (See **Carnegie unit**.) At the postsecondary level, credits were standardized across institution types, with 1 credit generally equivalent to 1 hour of classroom work for 1 semester.

Curriculum types: At its most aggregated level, the 1998 revised Secondary School Taxonomy divides the high school curriculum into four distinct curricula:

> **Academic:** See **academic subjects**.
>
> **Vocational:** The high school vocational curriculum is divided into family and consumer sciences education, general labor market preparation, and specific labor market preparation coursework. See **vocational education** and **vocational programs**.
>
> **Enrichment/other:** See **enrichment/other**.
>
> **Special education:** Includes courses designed for students with individual education plans. This report does not describe special education coursework, with the exception of functional or exceptional/special education (ESE) courses taken within the academic curriculum. These courses are designated as functional level courses.

Degrees: See **postsecondary award types.**

Dependency status: Postsecondary students reported whether they were financially dependent on or independent from their parents.

Disability status: High school students' disability status was constructed from teacher and parent responses. Postsecondary students' disability status was based on self-reported information.

Enrichment/other: Included in this high school curriculum are courses designed for students' personal enrichment, including courses in general skills; health, physical, and recreation education; religion and theology; and military science.

General work experience: Programs that allow students to earn course credit for paid or unpaid employment. Unlike cooperative education, general work experience is not connected to a specific occupational program of study.

New Basics standards: In the 1983 publication *A Nation at Risk,* the National Commission on Excellence in Education recommended that high school graduation requirements be strengthened, and that, at a minimum, all students take 4 years of English; 3 years each of mathematics, science, social studies; and one-half year of computer science. The "core academic standards" referred to in this report include the recommendations for English, mathematics, science, and social studies. See **core academic standards.**

Other/general students: Public high school graduates were classified as other/general if they met neither the college preparatory or vocational concentrator criteria. See **college preparatory** and **vocational concentrator**.

Postsecondary award types: Certificates and degrees awarded by postsecondary institutions are defined as follows:

> **Certificate:** An award granted for the successful completion of a postsecondary program of studies. Subbaccalaureate certificates require less than 4 years (or equivalent) of full-time college-level study. These certificates are usually awarded in a vocational field and may cover the same coursework as a vocational associate's degree, but without the general education requirements. Some certificates, such as teaching certificates, may be awarded for post-baccalaureate study.
>
> **Associate's degree:** A degree granted for the successful completion of a subbaccalaureate program of studies, usually requiring at least 2 years but less than 4 years (or equivalent) of full-time college-level study. This includes degrees awarded in vocational and academic fields.
>
> **Bachelor's degree:** A degree granted for the successful completion of a baccalaureate program of studies, usually requiring at least 4 years (or equivalent) of full-time college-level study.
>
> **Master's degree:** A degree awarded for successful completion of a program generally requiring 1 or 2 years of full-time college-level study beyond the bachelor's degree.
>
> **Education specialist:** A degree or certificate generally awarded for one year's work beyond the master's level.
>
> **Doctorate:** An earned degree carrying the title of Doctor. Many doctorates in both academic and professional fields require an earned master's degree as a prerequisite. First-professional degrees, such as M.D. and D.D.S., are not included under this heading.

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First-professional degree: A degree that signifies both completion of the academic requirement for beginning practice in a given profession and a level of professional skill beyond that normally required for a bachelor's degree. This degree is usually based on a program requiring at least 2 academic years of work before entrance and a total of at least 6 academic years of work to complete the degree program, including both previously required college work and the professional program itself.

Postsecondary institutions: Six main types of postsecondary institutions offer vocational education programs and are included in this report:

Public 4-year institutions: Include public institutions that award bachelor's or graduate degrees as their highest degree type.

Public 2-year institutions: Include public institutions that award associate's degrees or less-than-4-year, subbaccalaureate certificates as their highest award type. These institutions are sometimes referred to as community colleges in this report. See **community college**.

Public less-than-2-year institutions: Include public institutions that generally do not award degrees but award subbaccalaureate certificates of less than 2 years in length. These institutions are sometimes referred to as **vocational-technical institutes** in this report. See **vocational-technical institute.**

Private, not-for-profit 4-year institutions: Include private, not-for-profit institutions that award bachelor's or graduate degrees as their highest degree type.

Private, not-for-profit 2-year institutions: Include private, not-for-profit institutions that award associate's degrees or less-than-4-year, subbaccalaureate certificates as their highest award type. These institutions include all private, not-for-profit less-than-4-year institutions.

Private, for-profit institutions: Include private, for-profit institutions that usually offer certificates but may offer other degrees as well. These institutions are sometimes referred to as private proprietary institutions.

Postsecondary major: See **postsecondary program type**.

Postsecondary program type: Subbaccalaureate majors are classified into the following main program areas according to the taxonomy depicted in figure 2 in the Introduction to this report:

Academic: Includes mathematics and science; letters, humanities, and communications; social sciences; art and design; and education, among other fields.

Vocational: Includes program areas listed under vocational programs for postsecondary education. See **vocational programs,** *at the postsecondary level.*

Race–ethnicity: Classification indicating general racial or ethnic heritage based on self-identification. These categories are in accordance with the classification scheme presented below:

American Indian/Alaskan Native: A person having origins in any of the peoples of North America and maintaining cultural identification through tribal affiliation or community recognition.

Asian/Pacific Islander: A person having origins in any of the peoples of the Far East, Southeast Asia, the Indian subcontinent, or the Pacific Islands including, for example, China, India, Japan, Korea, the Philippine Islands, and Samoa.

Black, non-Hispanic: A person having origins in any of the black racial groups in Africa, excluding persons of Hispanic origin. For simplicity's sake, persons in this group were generally referred to as blacks in this report.

Hispanic: A person of Mexican, Puerto Rican, Cuban, Central or South American, or other Spanish culture or origin, regardless of race.

White, non-Hispanic: A person having origins in any of the peoples of Europe, North Africa, or the Middle East, excluding persons of Hispanic origin. For simplicity's sake, persons in this group were generally referred to as whites in this report.

School-based enterprise: A class-related activity that engages students in producing goods or services for sale or use to people other than the participating students themselves.

Socioeconomic status: Constructed from data on father's occupation, father's education, mother's education, family income, and material possessions in the household.

Subbaccalaureate student: A postsecondary student who reported that he or she was currently seeking an associate's degree, postsecondary certificate, or was not seeking a postsecondary credential of any kind.

Tech prep: Programs consisting of the 2 or 4 years of secondary education or high school preceding graduation and 2 years of higher education, or an apprenticeship program of at least 2 years following secondary instruction, with a common core of required proficiency in mathematics, science, communications, and technologies, designed to lead to an associate's degree or certificate in a specific career field. Also referred to as 2+2 programs.

Urbanicity: Schools were classified based on standards used by the U.S. Census:

> **Urban:** A school was located in the central city of a Standard Metropolitan Statistical Area (SMSA).
>
> **Suburban:** A school was located either (1) within a SMSA, but outside the central city; or (2) outside a SMSA, but in a town with a population of 2,500 or more and that was defined as urban.
>
> **Rural:** A school was located in a community with a population of less than 2,500 and that was defined as rural.

Vocational concentrator: Public high school graduates were classified as vocational concentrators if they completed 3.0 or more credits in a single occupational program area. Students who met both the vocational concentrator and college preparatory criteria were generally included with the vocational group. In a few instances, this "both" group was reported separately. See **college preparatory** and **other/general students**.

Vocational and technical education: Organized educational activities that offer a sequence of courses that provides individuals with the academic and technical knowledge and skills the individuals need to prepare for further education and for careers (other than careers requiring a baccalaureate, master's, or doctoral degree) in current or emerging employment sectors and include competency-based applied learning that contributes to the academic knowledge, higher-order reasoning and problem-solving skills, work attitudes, general employability skills, technical skills, and occupation-specific skills of an individual.

This publication refers to the following three types of vocational education at the high school level. (All vocational education at the postsecondary level is considered to be specific labor market preparation.) The examples given are not exhaustive of the courses offered in each area.

> **Family and consumer sciences education:** Consists of courses intended to prepare students for roles outside the paid labor market, including Home Economics, Child Development, Foods and Nutrition, and Clothing.
>
> **General labor market preparation:** Consists of courses that teach general employment skills but do not have as their primary objective preparing students for paid employment

in a specific field. These courses include Typewriting, Word Processing, Industrial Arts, Career Exploration, General Work Experience, and Technology Education.

Specific labor market preparation: Consists of courses that teach skills and provide information required in a particular vocation or occupation. Courses are organized into occupationally specific program areas. See **vocational programs**.

Vocational high school: Includes full-time vocational high schools and area or regional vocational schools. The latter type of school may serve postsecondary and adult students in addition to high school students.

Vocational programs: Vocational programs (also called specific labor market preparation or occupationally specific programs) are offered at both the secondary and postsecondary levels, although the classifications differ somewhat at the two levels. The examples given are not exhaustive of the courses offered in each area.

At the secondary or high school level, vocational coursework is grouped by the 1998 revised Secondary School Taxonomy into the following occupationally specific program areas:

Agriculture and renewable resources: Includes courses in Agricultural Mechanics, Horticulture, Animal Sciences, and Environmental Management.

Business: Offers training in business services and business management, including courses in Bookkeeping, Accounting, Data Entry, Office Procedures, Business and Management, and Banking and Finance.

Marketing and distribution: Includes courses related to the selling and distribution of goods and services, including Distributive Education, Distribution and Marketing, Fashion Merchandising, and Entrepreneurship.

Health care: Includes courses intended to prepare students for careers in the health professions, such as Health Occupations, Dental Assistant, Medical Laboratory Technologies, and Practical Nursing.

Public and protective services: Includes courses in Criminal Justice, Fire Protection, Public Administration, and Social Work.

Trade and industry: Includes coursework in construction trades, mechanics and repair, precision production, and transportation and material moving. The construction trades program area includes courses in Electricity, Carpentry, Plumbing, and General

Construction. Mechanics and repair includes courses in Industrial Maintenance; Radio and TV Repair; Air Conditioning, Refrigeration, and Heating; and Auto Mechanics. Precision production includes courses in Drafting, Graphic Arts, Machine Shop, Woodworking, Plastics, Electronics, and Leatherwork and Upholstery. Transportation and material moving includes Aviation Technology, Marine Engine and Boat Repair, and Truck Driving.

Technology and communications: Includes coursework in computer technology, communication technology, and other technologies. The computer technology field includes courses in Computer Applications, Computer Programming, and Data Processing. The communication technology field includes courses in Broadcast Management, Film Making, and Radio and Television Production. Other technology courses include Electronic Technology, Industrial Production Technology, and Chemical Technology.

Personal and other services: Includes courses in Cosmetology, Clothing and Textiles, Vocational Home Economics, and Institutional Maintenance.

Food service and hospitality: Includes courses in Food Service and Nutrition, Hospitality, and Travel and Tourism.

Child care and education: Includes courses in Teacher Assisting, Child Care, and Elder Care.

At the postsecondary level, vocational coursework is grouped into the following occupationally specific program areas according to the taxonomy depicted in figure 2 in the Introduction to this report:

Agriculture: Includes coursework in agricultural business and production including horticulture, agricultural sciences such as animal sciences, and conservation and renewable natural resources.

Business and office: Includes coursework in business administration and management such as accounting, and in administrative and secretarial services such as typing and word-processing.

Marketing and distribution: Includes coursework in the marketing operations of apparel and accessories, business and personal services, financial services, and hospitality and recreation, as well as retailing and wholesaling operations.

Health: Includes coursework in nursing and other allied health fields such as dental and physical therapy assisting, and in health sciences such as medical laboratory and clinical anatomy.

Home economics: Includes coursework in family and community studies, foods and nutrition science, child care provider/assistant, and clothing, apparel, and textile workers and managers.

Technical education: Includes the following subgroupings:

Protective services: Includes coursework in criminal justice and fire protection.

Computers/data processing: Includes co coursework urses in computer programming, data processing, and computer and information sciences.

Engineering/science technologies: Includes coursework in architectural engineering technology; computer engineering technology; heating, air conditioning, and refrigeration technology; industrial/manufacturing technology; biological technology; and nuclear and industrial radiological technologies.

Communication technologies: Includes coursework in educational media, photographic technology, and radio and television broadcasting technology.

Trade and industry: Includes coursework in construction; automotive and other mechanics and repairers; drafting and other precision production; transportation and materials moving; and consumer, personal, and miscellaneous services.

Vocational specialist: Public high school graduates were classified as vocational specialists if they completed 4 or more Carnegie units in a single vocational program area in high school, with at least 2 of those units in a second or later course in the sequence. This classification is based on a more strict definition of vocational participation than that for vocational concentrators. See **vocational concentrator**.

Vocational teacher: Teachers of grades 9–12 were assigned vocational teaching status if 50 percent or more of the courses they taught were in a vocational area as defined by the Secondary School Taxonomy, or their primary assignment was in a vocational area when course information was not available.

Vocational-technical institute: Include public institutions that generally do not award degrees but award subbaccalaureate certificates of less than 2 years in length. See **postsecondary institution types**, **public less-than-2-year institutions.**

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